PCI Expansion Unit

for Fujitsu M10/SPARC M10 Systems
Service Manual

FUJITSU

ORACLE

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Preface

This document describes the maintenance procedure for the PCI expansion unit for Oracle or Fujitsu M10/SPARC M10 Systems. The maintenance work should be performed by service engineers and/or field engineers.

Fujitsu M10 is sold as SPARC M10 Systems by Fujitsu in Japan.
Fujitsu M10 and SPARC M10 Systems are identical products.

The preface includes the following sections:

- Audience
- Related Documentation
- Text Conventions
- Notes on Safety
- Syntax of the Command-Line Interface (CLI)
- Document Feedback

Audience

This document is intended for service engineers and field engineers who perform maintenance work on the system.

Related Documentation

All documents for your server are available online at the following locations.

- Sun Oracle software-related documents (Oracle Solaris, etc.)
  http://www.oracle.com/documentation/
- Fujitsu documents
  Japanese site

  http://jp.fujitsu.com/platform/server/sparc/manual/

  Global site

  http://www.fujitsu.com/global/services/computing/server/sparc/downloads/manual/

The following table lists documents related to SPARC M10 Systems.

SPARC M10 Systems related documentation (*1)
Fujitsu M10/SPARC M10 Systems Getting Started Guide (*2)
Fujitsu M10/SPARC M10 Systems Quick Guide
Fujitsu M10/SPARC M10 Systems Important Legal and Safety Information (*2)
Software License Conditions for Fujitsu M10/SPARC M10 Systems
Fujitsu M10/SPARC M10 Systems Safety and Compliance Guide
Fujitsu M10/SPARC M10 Systems Security Guide
Fujitsu M10/SPARC M10 Systems/SPARC Enterprise/PRIMEQUEST Common Installation Planning Manual
Fujitsu M10/SPARC M10 Systems Installation Guide
Fujitsu M10-1/SPARC M10-1 Service Manual
Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual
Crossbar Box for Fujitsu M10/SPARC M10 Systems Service Manual
PCI Expansion Unit for Fujitsu M10/SPARC M10 Systems Service Manual
Fujitsu M10/SPARC M10 Systems PCI Card Installation Guide
Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide
Fujitsu M10/SPARC M10 Systems Domain Configuration Guide
Fujitsu M10/SPARC M10 Systems XSCF Reference Manual
Fujitsu M10/SPARC M10 Systems RCIL User Guide (*3)
Fujitsu M10/SPARC M10 Systems XSCF MIB and Trap Lists
Fujitsu M10/SPARC M10 Systems Product Notes
Fujitsu M10/SPARC M10 Systems Glossary

*1 The listed manuals are subject to change without notice.
*2 The printed manual comes with the product.
*3 This document applies specifically to the FUJITSU M10 and FUJITSU ETERNUS storage system.

Text Conventions

This manual uses the following fonts and symbols to express specific types of information.

Font/Symbol	Meaning	Example
AaBbCc123	What you type, when contrasted with on-screen computer output. ~This font indicates an example of command input.	XSCF> **adduser jsmith**
AaBbCc123	The names of commands, files, and directories; on-screen computer output. This font indicates an example of command input in the frame.	XSCF> **showuser -P** User Name: jsmith Privileges: useradm auditadm
Italic	Indicates the name of a reference manual.	See the *Fujitsu M10/SPARC M10 Systems Installation Guide*.
" "	Indicates the names of chapters, sections, items, buttons, or menus.	See "Chapter 2 Network Connection."

Command syntax in the text

While the XSCF commands have a section number of (8) or (1), it is omitted from the text.
The Oracle Solaris commands have a section number such as (1M) in the text.
Each command has a section number in a command name to prompt users to refer to it.

Notes on Safety

Read the following documents thoroughly before using or handling any SPARC M10 Systems.

- *Fujitsu M10/SPARC M10 Systems Important Legal and Safety Information*
- *Fujitsu M10/SPARC M10 Systems Safety and Compliance Guide*

Syntax of the Command-Line Interface (CLI)

The command syntax is as follows:

- A variable that requires the input of a value must be put in Italics.
- An optional element must be enclosed in [].
- A group of options for an optional keyword must be enclosed in [] and delimited by |.

Document Feedback

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Chapter 1

Before Starting Maintenance Work

This chapter describes the safety precautions that must be observed before starting any maintenance work, and provides important information that you should know. Note the meanings of each of the following symbols and labels to ensure that the work is done correctly.

- Warning/Caution Indications
- Labels/Tags
- Safety Precautions
- Notes Regarding Static Electricity
- Other Precautions
- Emergency Power Off
- Important Information about the XCP Firmware

1.1 Warning/Caution Indications

This manual uses the following conventions to indicate warning and alert messages, which are intended to prevent injury to the user and others as well as damage to property.

Warning - "WARNING" indicates a potential hazard that could result in death or serious personal injury if the user does not perform the procedure correctly.

Caution - "CAUTION" indicates a potential hazard that could result in minor or moderate personal injury if the user does not perform the procedure correctly. This also indicates that damage to the unit or other property may occur if the user does not perform the procedure correctly.

1.2 Labels/Tags

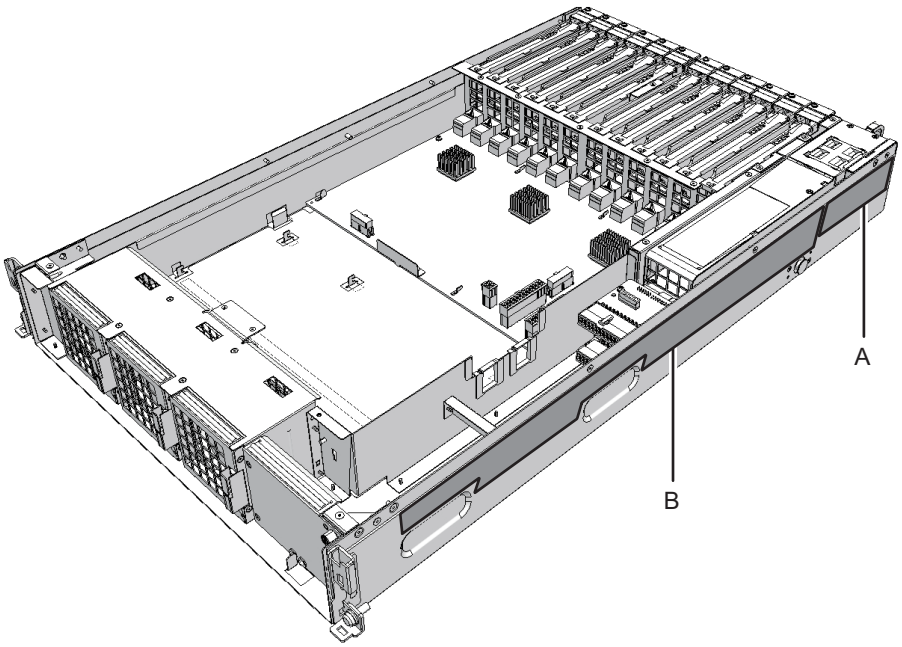
This section describes the labels and tags attached to the chassis.
When performing maintenance, always observe the precautions on the standard labels attached to the chassis.

Caution - Do not remove the labels or tags.

Note - The contents of the labels and tags described here may differ from those actually attached to the chassis.

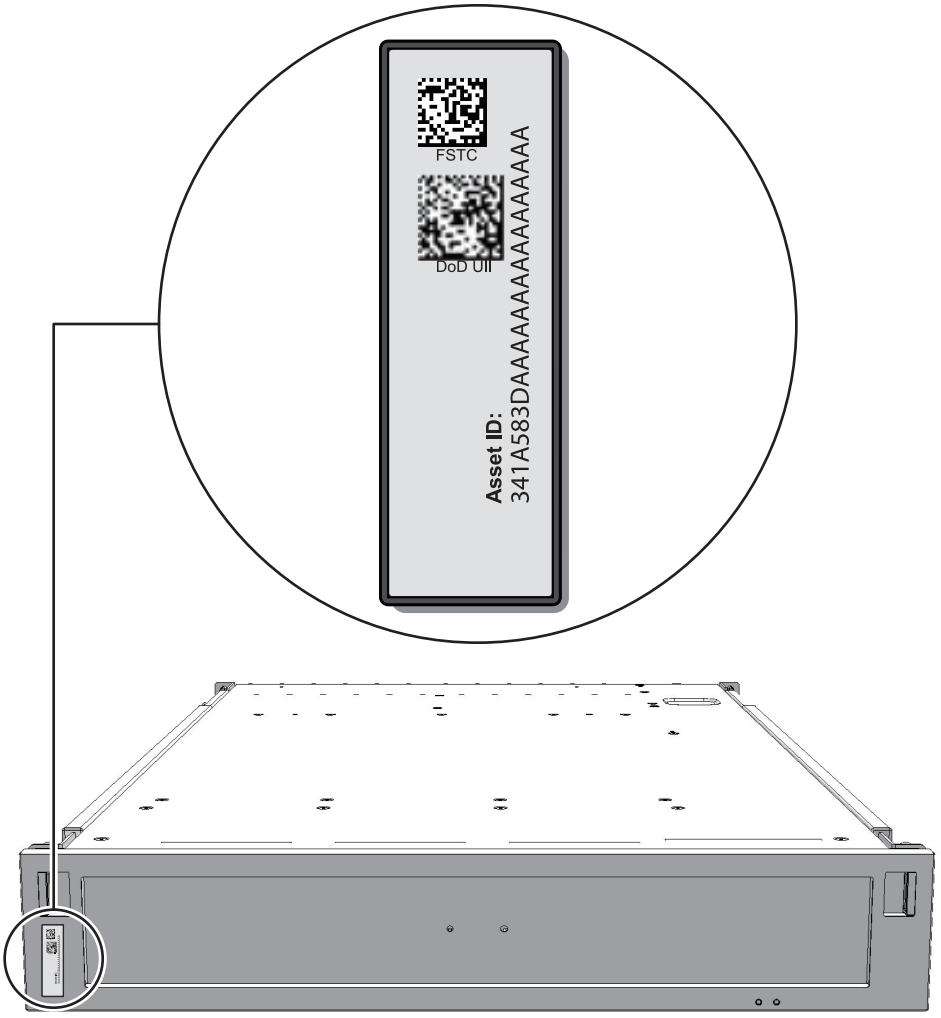
- The system nameplate label (A in the figure) provides the product model number, serial number, and version number required for maintenance and management.
- The standard label (B in the figure) contains notes and the following approved standards.
  - Security: NRTL/C
  - Electromagnetic wave: VCCI-A, FCC-A, DOC-A, KCC, and C-Tick
  - Security and electromagnetic wave: CE and GOST-R

Figure 1-1 Positions of system nameplate label/standard label



- The RFID tag contains the Asset ID. The RFID tag is attached to the front cover of the chassis.

Figure 1-2 RFID tag



1.3 Safety Precautions

Observe the following precautions to protect yourself when performing maintenance.

- Observe all the precautions, warnings, and instructions described on the chassis.
- Do not insert foreign objects into the openings in the chassis. Any such foreign object could come into contact with high-voltage circuitry or could short circuit

the components, causing a fire or an electric shock.

- Contact a service engineer and request inspection of the chassis.

Safety precautions on electricity

- Confirm that the voltage and frequency of your input power supply match those shown on the electric rating label affixed on the chassis.
- Wear a wrist strap when handling the I/O board, PCI tray, or other print boards.
- Use a grounded power outlet.
- Do not make any mechanical or electrical alterations. We do not take any responsibility for issues arising from non-authorized modifications to the chassis.

1.4 Notes Regarding Static Electricity

Observe the precautions concerning the electrostatic discharge (ESD) as described in Table 1-1 to ensure the safety of personnel and the system.

Table 1-1 ESD precautions

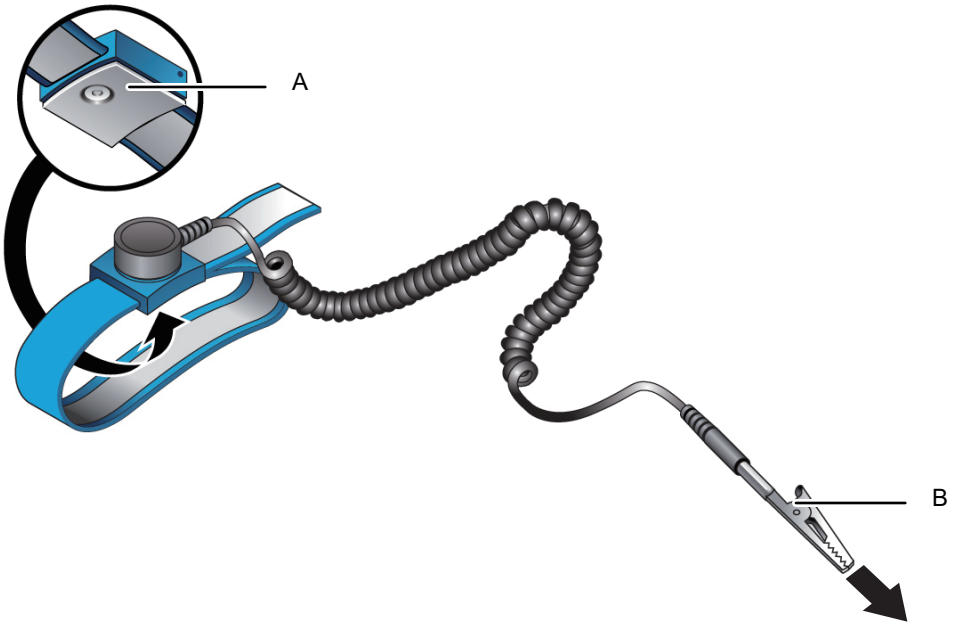
Item	Note
Wrist strap	Wear an antistatic wrist strap when handling printed boards.
ESD mat	An approved ESD mat provides protection from static damage when used together with a wrist strap. The mat also acts as a cushion to protect the small parts that are attached to printed boards.
Antistatic bag/ ESD safe packaging box	After removing a printed board or component, place it in the antistatic bag or ESD safe packaging box.

Using a wrist strap

Wear a wrist strap in such a way that the inner metal surface (A in the figure) of the wrist strap band is in contact with your skin. Connect the clip (B in the figure) directly to the chassis.

Caution - Do not connect the wrist strap clip to the ESD mat. By connecting the wrist strap clip to the chassis, the operator and components assume the same electrical potential, thus eliminating the danger of damage from static discharge.

Figure 1-3 Wrist strap connection destination



1.5 Other Precautions

- The printed boards of the PCI expansion unit are susceptible to static damage. To prevent damage to the printed boards, therefore, wear a wrist strap and ground it to the chassis prior to starting maintenance.
- When mounting a component in the chassis, confirm that the connectors on the chassis and components do not have any bent pins and that the pins are aligned. If you attempt to mount a component while any of the connectors have bent pins, the chassis or component may be damaged. When mounting a component, perform the work carefully so as not to bend any pins.
- If you cannot reach the latch lock of the connector when removing the management cable or other cables, depress the latch with the tip of a flat-bladed screwdriver and then remove the cable. If you attempt to remove the cable forcibly, the link board and/or the PCI Express (PCIe) card may be damaged.
- Do not use a power cord other than the specified type.

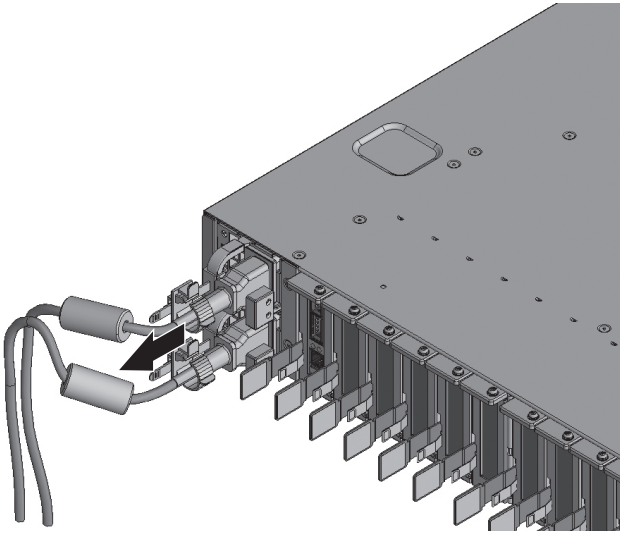
1.6 Emergency Power Off

This section explains the procedure for powering off the system in the case of an emergency.

Caution - Immediately shut down the product in the event of an emergency (for example, when the chassis emits smoke or flame) and then disconnect the input power. Prevention of fire must always be your highest priority, regardless of the task that you are currently performing.

1. **Remove all the power cords from the power supply unit installed at the rear of the chassis.**

Figure 1-4 Removing power cords



1.7 Important Information about the XCP Firmware

This section describes important information that you should know about the XCP firmware version and when connecting the PCI expansion unit.

1.7.1 Precautions for updating the XCP firmware

- [SPARC M10-1]
  The logical domain configuration of the physical partition will return to the factory default at the next startup when any of the following conditions are met: If the logical domain configuration contains a guest domain, the OpenBoot PROM environment variable of the control domain will also be initialized.
  - When an update is performed from firmware version XCP2043 or earlier to firmware version XCP2044 or later in a configuration with a PCI expansion unit connected
  - When a PCI expansion unit is installed or removed from a system with a firmware version that is XCP2044 or later

  Save the logical domain configuration information from Oracle Solaris to XML in advance. To save it to XML, execute the ldm list-constraints -x command, and to restore it from XML, execute the ldm init-system -i command. Also, save the setting information for the OpenBoot PROM environment variable of the control domain to the notepad, and then reset it. To display it, execute the printenv command while the ok prompt is displayed. For details on these procedures, see "1.7.3 How to save/restore the logical domain configuration information and the OpenBoot PROM environment variable."

  The processes to be performed when it is necessary to save/restore each item of information related to the PCI expansion unit configuration are as follows.

Table 1-2 Necessary processes related to the PCI expansion unit configuration

PCI expansion unit installation	Domain configuration	Reconfiguration of Oracle VM Server for SPARC config	Resetting of OpenBoot PROM environment variable
Unsupported	factory-default	Unnecessary	Unnecessary
Unsupported	Contains a guest domain	Unnecessary	Unnecessary
Supported	factory-default	Unnecessary	Unnecessary
Supported	Contains a guest domain	Necessary (XML)	Necessary

1.7.2 Notes on using the direct I/O function

- [SPARC M10-4/M10-4S]
  If the firmware version XCP2044 or later is used on the SPARC M10-4 or a firmware version XCP2050 or later is used on the SPARC M10-4S and one of the following operations is performed with the setpciboxdio command, the logical domain configuration of the physical partition will return to the factory default at the next startup. If the domain configuration contains a guest domain, the OpenBoot PROM environment variable of the control domain will also be initialized.
  - Changing the enable/disable setting for the direct I/O function of the PCI

expansion unit

- Installing/removing/replacing the PCI expansion unit for the PCIe slot of the SPARC M10 chassis for which the direct I/O function of the PCI expansion unit is enabled

Save the logical domain configuration information from Oracle Solaris to XML in advance. To save it to XML, execute the ldm list-constraints -x command, and to restore it from XML, execute the ldm init-system -i command. Also, save the setting information for the OpenBoot PROM environment variable of the control domain to the notepad, and then reset it. To display it, execute the printenv command while the ok prompt is displayed. For details on these procedures, see "1.7.3 How to save/restore the logical domain configuration information and the OpenBoot PROM environment variable."

When executing the setpciboxdio command to change the enable/disable setting for the direct I/O function of the PCI expansion unit, the following operations must be performed to save/restore each item of information.

Table 1-3 Operations to change the enable/disable setting with the setpciboxdio command

PCI expansion unit configuration	Domain configuration	Reconfiguration of Oracle VM Server for SPARC config	Resetting of OpenBoot PROM environment variable
Existence/non-existence	factory-default	Unnecessary	Necessary
Existence/non-existence	Contains a guest domain	Necessary (XML)	Necessary

Suppose that the setpciboxdio command is executed to install, remove, or replace the PCI expansion unit for the PCIe slot of the SPARC M10 chassis for which the direct I/O function of the PCI expansion unit is enabled. The following operations must be performed to save/restore each item of information:

Note - If you use the PCI Hot Plug (PHP) function to perform maintenance on the PCI expansion unit, the direct I/O function is disabled. Therefore, it is not necessary to save/restore each item of information.

Table 1-4 Operations when installing/removing/replacing the PCI expansion unit for the PCIe slot of the SPARC M10 chassis for which the direct I/O function is enabled

Maintenance environment	Domain configuration	Reconfiguration of Oracle VM Server for SPARC config	Resetting of OpenBoot PROM environment variable
When stopping PPAR for installation/removal	factory-default Contains a guest domain	Unnecessary Necessary (XML)	Unnecessary Necessary
When stopping PPAR to replace the failed PCI expansion unit (*1)	factory-default Contains a guest domain	Unnecessary Necessary (XML)	Unnecessary Necessary
When stopping PPAR to replace the normal PCI expansion unit (*1)	factory-default Contains a guest domain	Unnecessary Unnecessary	Unnecessary Unnecessary

*1: This includes the replacement of the link card, link cable, management cable or link board.

1.7.3 How to save/restore the logical domain configuration information and the OpenBoot PROM environment variable

1. **Execute the ldm ls-spconfig command on Oracle Solaris super-user prompt to display the list of the configuration information, and then confirm the configuration information to be saved.**
   The following example shows that test3 is the current configuration information.

```
# ldm ls-spconfig
factory-default
test1
test2
test3 [current]
```

   If the current configuration is shown as "next poweron," execute the ldm add-spconfig command to save the current configuration information. This is because the configuration information stored in the XSCF is different from that stored in the control domain.

   In the following example, the current configuration information is saved in test4 because test3 is "next poweron."

```
# ldm ls-spconfig
factory-default
test1
test2
test3 [next poweron]
# ldm add-spconfig test4
```

```
# ldm ls-spconfig
factory-default
test1
test2
test3
test4 [current]
```

2. **Execute the ldm set-spconfig command to specify the configuration information to be set.**
   The following example specifies test1.

```
# ldm set-spconfig test1
# ldm ls-spconfig
factory-default
test1 [next poweron]
test2
test3
```

3. **Execute the poweroff and poweron commands of the XSCF firmware to turn off/on the power to the physical partition.**
   Before turning off the power to the system, stop the logical domain with an appropriate procedure and use the ldm unbind command to transfer it to the inactive state.

   The following example shows that the power to PPAR 0 is turned off/on.

```
XSCF> poweroff -p 0
XSCF> poweron -p 0
```

4. **Execute the ldm ls-spconfig command to confirm that the configuration information is set as specified.**
   The following example shows that test1 is set as the current configuration information.

```
# ldm ls-spconfig
factory-default
test1 [current]
test2
test3
```

5. **Execute the ldm ls-constraints -x command to save the current configuration information.**
   If necessary, backup XML.

   In the following example, the current configuration information is saved in test1.xml.

```
# ldm ls-constraints -x > /var/tmp/test1.xml
```

6. **Execute the more command to confirm that the configuration information is correct.**

```
# more /var/tmp/test1.xml
<?xml version="1.0"?>
<LDM_interface version="1.3" xmlns:xsi=http://www.w3.org/2001/
XMLSchema-instancce
```

7. **If there are multiple pieces of configuration information to be saved, save all of them.**
   Repeat from step 2 to step 6 to save the configuration information.
8. **Execute the ldm set-spconfig factory-default command to set the system to the factory default.**

```
# ldm set-spconfig factory-default
# ldm ls-spconfig
factory-default [next poweron]
test1 [current]
test2
test3
```

9. **Execute the ldm rm-spconfig command to delete all the configuration information.**

```
# ldm rm-spconfig test1
# ldm rm-spconfig test2
# ldm rm-spconfig test3
# ldm ls-config
factory-default [next poweron]
```

10. **Stop the logical domain to set it to the OpenBoot PROM state.**
    Before turning off the power to the system, stop the logical domain with an appropriate procedure and use the ldm unbind command to transfer it to the inactive state.

```
# shutdown -i0 -g0 -y
```

11. **Check the OpenBoot PROM environment variable with the printenv command.**

```
{0} ok printenv
Variable Name           Value                          Default Value
ttya-rts-dtr-off        false                          false
ttya-ignore-cd          true                           true
keyboard-layout
reboot-command
security-mode           none                           No default
security-password                                      No default
```

```
security-#badlogins     0                              No default
diag-switch?            false                          false
local-mac-address?      true                           true
fcode-debug?            false                          false
scsi-initiator-id       7                              7
oem-logo                                               No default
oem-logo?               false                          false
oem-banner                                             No default
oem-banner?             false                          false
ansi-terminal?          true                           true
screen-#columns         80                             80
screen-#rows            34                             34
ttya-mode               9600,8,n,1,-                   9600,8,n,1,-
output-device           virtual-console                virtual-console
input-device            virtual-console                virtual-console
auto-boot-on-error?     false                          false
load-base               16384                          16384
auto-boot?              false                          true
network-boot-arguments
boot-command            boot                           boot
boot-file
boot-device             /pci@8000/pci@4/pci@0/pc ...   disk net
multipath-boot?         false                          false
boot-device-index       0                              0
use-nvramrc?            false                          false
nvramrc
error-reset-recovery    boot                           boot
```

If there is any omitted section with "...," review this section.

```
{0} ok printenv boot-device
boot-device =           /pci@8000/pci@4/pci@0/pci@0/scsi@0/disk@p0,0
```

12. **Execute the poweroff command of the XSCF firmware to turn off the power to the physical partition.**

```
XSCF> poweroff -p 0
```

13. **In accordance with the model in use, restore the configuration information of the logical domain from the XML file.**
    - For the SPARC M10-1
      When updating from the firmware version XCP2043 or earlier to the firmware version XCP2044 or later in the system with the PCI expansion unit, restore the configuration information of the logical domain from the XML file in step 14 and later.
      For details on the firmware update, see the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.
    - For the SPARC M10-4/M10-4S
      When executing the setpciboxdio command to change the enable/disable setting for the direct I/O function of the PCI expansion unit, restore the

configuration information of the logical domain from the XML file in step 14 and later.
For details on the setpciboxdio command, see the *Fujitsu M10/SPARC M10 Systems XSCF Reference Manual*.

14. **Execute the showdomainconfig command of the XSCF firmware to confirm that the configuration information at the next startup of the physical partition is the factory default.**
The following example shows that the configuration information at the next startup is the factory default.

```
XSCF> showdomainconfig -p 0
PPAR-ID     :0
Booting config
(Current)  :factory-default
(Next)     :factory-default
----------------------------------------------------------------------------
Index       :1
config_name :factory-default
domains     :1
date_created:-
```

The following example shows that the configuration information at the next startup is not the factory default. In this case, execute the setdomainconfig command to set the configuration information at the next startup of the physical partition to the factory default.

```
XSCF> showdomainconfig -p 0
PPAR-ID     :0
Booting config
(Current)  :test1
(Next)     :test2
:
XSCF> setdomainconfig -p 0 -i 1
XSCF> showdomainconfig -p 0
PPAR-ID     :0
Booting config
(Current)  :test1
(Next)     : factory-default
----------------------------------------------------------------------------
Index       :1
config_name :factory-default
domains     :1
date_created:-
```

15. **Check auto-boot? of the OpenBoot PROM environment variable to stop in the OpenBoot PROM state.**
If the value is true, change it to false.

```
XSCF> setpparparam -p 0 -s bootscript "setenv auto-boot? false"
PPAR-ID of PPARs that will be affected:0
OpenBoot PROM variable bootscript will be changed.
Continue? [y|n] :y
```

If you changed the value, check the OpenBoot PROM environment variable.

```
XSCF> showpparparam -p 0
use-nvramrc         :-
security-mode       :-
bootscript          :
setenv auto-boot? false
```

16. **Execute the poweron command to restart the physical partition.**

```
XSCF> poweron -p 0
```

17. **Execute the showdomainstatus command to check the status of the control domain.**
    Confirm that the status of the control domain is displayed as "OpenBoot Running" indicating that it is in the OpenBoot PROM state.

```
XSCF> showdomainstatus -p 0
Logical Domain Name   Status
primary               OpenBoot Running
```

18. **Execute the console command to switch to the control domain console.**

```
XSCF> console -p 0 -y
Console contents may be logged.
Connect to PPAR-ID 0?[y|n] :y
```

19. **Based on the record in step 11, restore the OpenBoot PROM environment variable.**
    In the following example, auto-boot? is restored to true.

```
{0} ok setenv auto-boot? true
auto-boot? =            true
{0} ok printenv auto-boot?
auto-boot? =            true
```

20. **Boot Oracle Solaris.**

```
{0} ok boot
```

21. **With the Oracle Solaris super-user prompt, confirm that the system has**

started with the factory default.

```
# ldm ls-spconfig
factory-default [current]
```

22. **Execute the ldm init-system command and the shutdown command to restart the control domain.**

```
# ldm init-system -i /var/tmp/test1.xml
Initiating a delayed reconfiguration operation on the primary domain.
All configuration changes for other domains are disabled until the primary
domain reboots, at which time the new configuration for the primary domain
will also take effect.
# shutdown -y -g0 -i6
```

23. **After restarting the control domain, bind and start other logical domains.**
For logical domains with dependency, start them in the correct order.

In the following example, both root-domain and guest-domain are bound and started.

```
# ldm bind root-domain
# ldm start-domain root-domain
# ldm bind guest-domain
# ldm start-domain guest-domain
```

If the binding failed because an overlapping resource exists, delete the relevant resource from the logical domain.

The following example shows that an overlapping resource has been deleted.

```
# ldm bind root-domain
No free matching I/O device for LDom root-domain, name PCIE1
# ldm start-reconf primary
# ldm remove-io PCIE1 primary
------------------------------------------------------------------------------
Notice: The primary domain is in the process of a delayed reconfiguration.
Any changes made to the primary domain will only take effect after it reboots.
------------------------------------------------------------------------------
```

If you deleted a resource, restart the control domain.

```
# shutdown -i6 -g0 -y
```

If you deleted a resource, restart the control domain and then bind and start other logical domains.

For logical domains with dependency, start them in the correct order.

In the following example, both root-domain and guest-domain are bound and

started.

```
# ldm bind root-domain
# ldm start-domain root-domain
# ldm bind guest-domain
# ldm start-domain guest-domain
```

24. **Execute the ldm ls command to confirm that the logical domain is operating normally.**

```
# ldm ls
NAME              STATE      FLAGS   CONS    VCPU  MEMORY   UTIL  UPTIME
primary           active     -n-cv-  UART    8     8G        66%  4m
root-domain       active     -t----  5000    8     4G        19%  29s
:
:
```

25. **After restoring the configuration information, execute the ldm add-spconfig command to save the configuration information to the XSCF.**
In the following example, the configuration information of test1 has been saved to the XSCF.

```
# ldm add-spconfig test1
# ldm ls-spconfig
factory-default
test1 [current]
```

26. **If there are multiple pieces of configuration information to be restored, restore all of them.**
Repeat from step 14 to step 25 to restore the configuration information.

Chapter 2

Understanding the PCI Expansion Unit Components

This chapter describes the components of the PCI expansion unit.
Before starting any maintenance work, check and understand the configuration of the components and the LED indications.

- Identifying the Names and Locations of Components
- Checking the Status with the LED

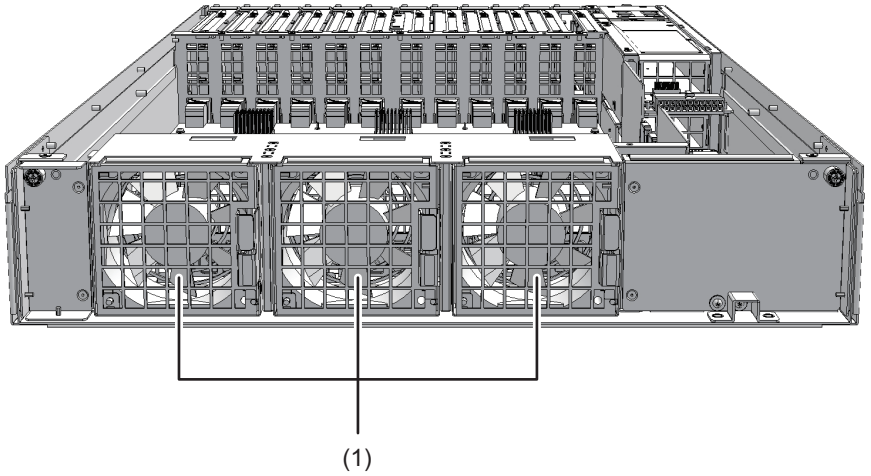
For the specifications of each component, see "Appendix B Component Specifications."

2.1 Identifying the Names and Locations of Components

This section describes the names and locations of each component.

Components that can be accessed from the front

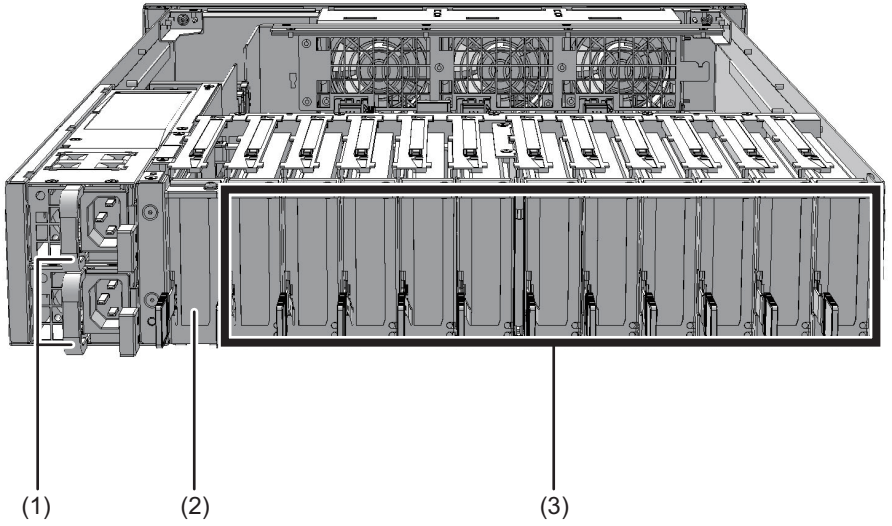
Figure 2-1 Location of components that can be accessed from the front



Location number	Component
1	Fan unit

Components that can be accessed from the rear

Figure 2-2 Location of components that can be accessed from the rear



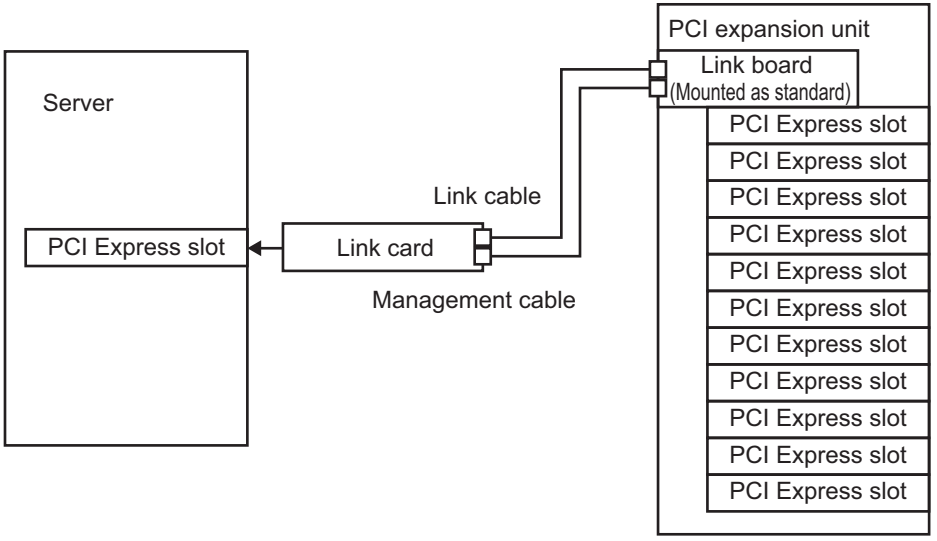
Location number	Component
1	Power supply unit
2	Link board (*)
3	PCI Express (PCIe) card

*: The link board can be mounted only in its dedicated slot.

- Connecting the link board to the link card

Connect the link board mounted in the PCI expansion unit to the link card mounted in the SPARC M10-1/M10-4/M10-4S with the link cables and the management cable. Figure 2-3 shows an example of the connection of the link board and the link card.

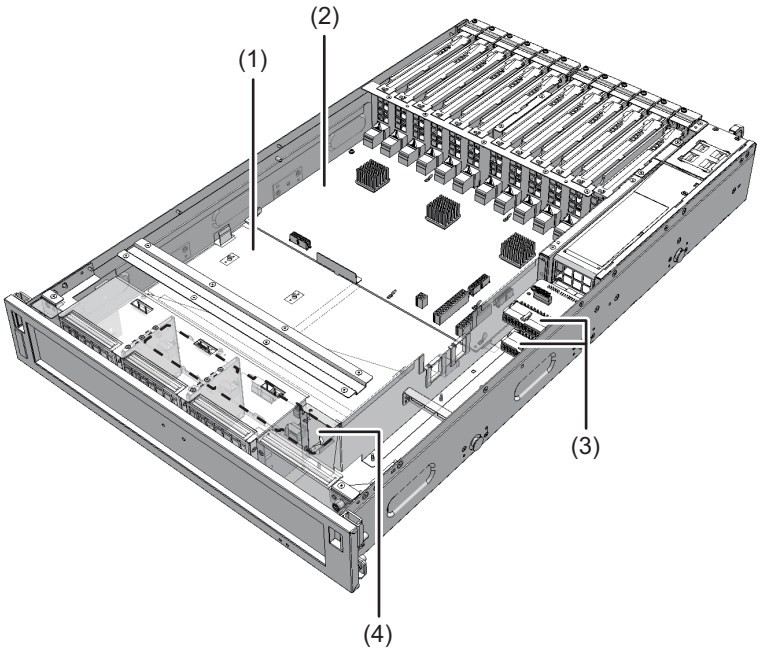
Figure 2-3 Example of connection



Internal components

Note - To access internal components, remove the PCI tray from the PCI expansion unit. For details on the procedure for removing the PCI tray, see "14.4 Removing the PCI Tray."

Figure 2-4 Locations of internal components



Location number	Component
1	PCI tray
2	I/O board
3	PSU backplane
4	Fan backplane

2.2 Checking the Status with the LED

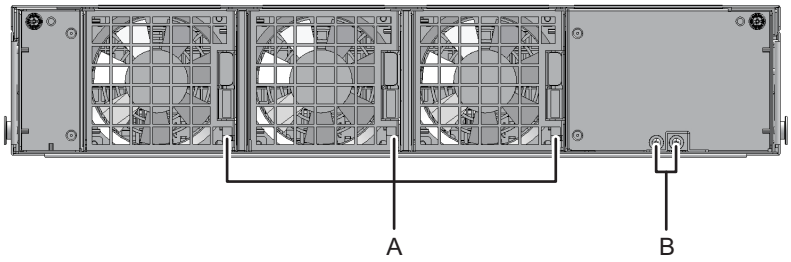
This section describes how to identify the state of each component from its LED indication.
LEDs are mounted on the front panel of the PCI expansion unit and on each component that can be maintained. If an error occurs, check the LEDs to see which component requires maintenance.

2.2.1 Front LEDs on the PCI expansion unit

The following LEDs are mounted on the front panel of the PCI expansion unit to indicate the status.

- Fan unit (A in the figure)
- PCI expansion unit (B in the figure)

Figure 2-5 LEDs on front of the chassis



The LEDs on each component and the statuses those LEDs indicate are listed below.

Table 2-1 LEDs and status of fan unit

Name	Color	Status	Description
CHECK ⚠	Amber	On	Indicates that an error has occurred.
		Blinking (*)	Indicates that the component requires maintenance. (This function is also referred to as the "locator.")
		Off	Indicates the normal state. Or, the breaker is open or the power supply is otherwise off.

*: The blink interval is 1 second (1 Hz).

Table 2-2 LEDs and status of PCI expansion unit

Name	Color	Status	Description
READY	Green	On	Indicates that the component is operating.
⏻		Blinking (*)	Power is supplied, but the system is not running. During this time, all of the I/O boards will be in the standby state.
		Off	The system is stopped.
CHECK	Amber	On	Indicates that an error has occurred.
⚠		Blinking (*)	Indicates that the PCI expansion unit chassis requires maintenance. (This function is also referred to as the "locator.")
		Off	Indicates the normal state. Or, the breaker is open or the power supply is otherwise off.

*: The blink interval is 1 second (1 Hz).

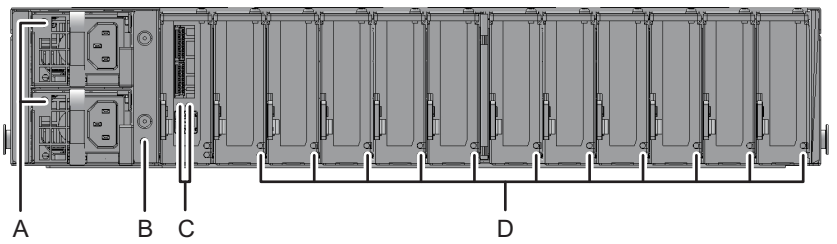
2.2.2 LEDs on rear of PCI expansion unit

An LED is mounted on each component. If a component experiences an error, check the LEDs to see which component requires maintenance. Check the LEDs before starting maintenance work.

The following LEDs are mounted on the rear panel of the PCI expansion unit.

- Power supply unit (A in the figure)
- I/O board (B in the figure)
- Link board (C in the figure)
- PCIe slot (D in the figure)

Figure 2-6 LEDs on the rear of the chassis



The LEDs mounted on each component and the statuses indicated by those LEDs are listed below.

Table 2-3 LEDs and status of power supply unit

Name	Color	Status	Description
POWER/FAIL	Green	On	The input power is turned on and power is being supplied normally.
☼ ⚠		Blinking (*)	Standby condition.
	Amber	On	Indicates that an error has occurred.
		Blinking (*)	Warning state (an error has occurred but the power unit is still operating).
		Off	The input power is turned off.

*: The blink interval is 1 second (1 Hz).

Table 2-4 LEDs and status of I/O board

Name	Color	Status	Description
CHECK (Indicator)	Amber	On	Indicates that an error has occurred.
⚠		Blinking (*)	Indicates that the component requires maintenance. (This function is also referred to as the "locator.")
		Off	Indicates the normal state. Or, the breaker is open or the power supply is otherwise off.

*: The blink interval is 1 second (1 Hz).

Table 2-5 LEDs and status of link board

Name	Color	Status	Description
LINK STATUS (PCI-Ex) /left side	Green	On	The link is established with PCI-Express Gen3 x8.
		Blinking (*)	The link is established with other than PCI-Express Gen3 x8 (degradation condition).
		Off	The link is down.
LINK STATUS (Management) /right side	Green	On	The management link is established.
		Blinking (*)	The management link is disconnected.
		Off	Indicates that power is not being supplied.

*: The blink interval is 1 second (1 Hz).

Table 2-6 LEDs and status of PCIe slot

Name	Color	Status	Description
POWER	Green	On	Indicates that power is being supplied.
		Off	Indicates that power is not being supplied.
ATTENTION	Amber	On	Indicates that an error has occurred.
		Blinking (*)	Indicates that the component requires maintenance. (This function is also referred to as the "locator.")
		Off	Indicates the normal state.

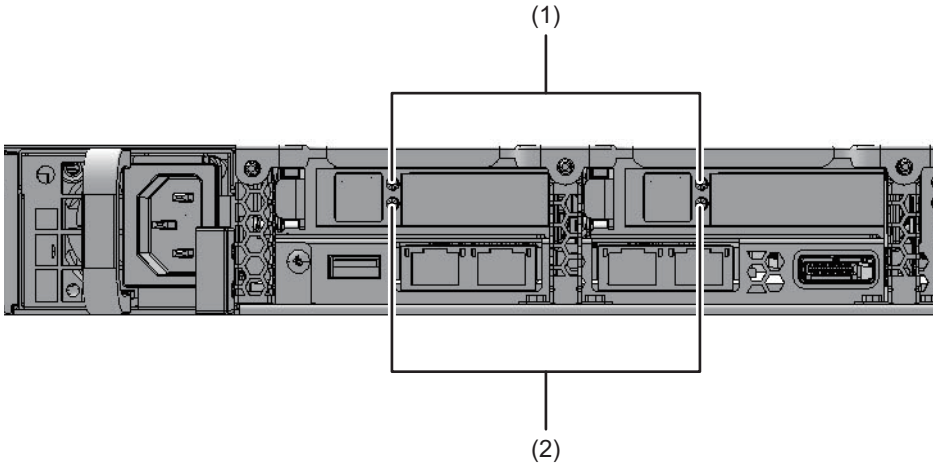
*: The blink interval is 1 second (1 Hz).

2.2.3 LEDs on link card

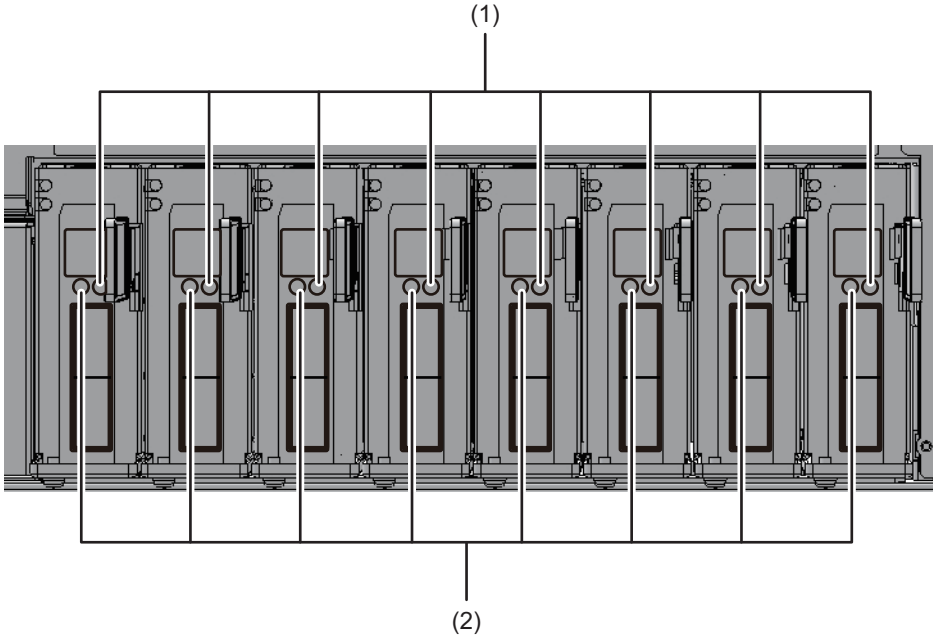
The link card is mounted in the PCIe slot of the server.

Figure 2-7 LEDs of link card

SPARC M10-1



SPARC M10-4/M10-4S



The LEDs on the link card and the statuses indicated by those LEDs are listed below.

Table 2-7 LEDs and status of link card

Location number	Name	Color	Status	Description
1	LINK STATUS (PCI-Ex)	Green	On	The link is established with PCI-Express Gen3 x8.
			Blinking (*)	The link is established with other than PCI-Express Gen3 x8 (degradation condition).
			Off	The link is down.
2	LINK STATUS (Management)	Green	On	The management link is established.
			Blinking (*)	The management link is disconnected.
			Off	Indicates that power is not being supplied.

*: The blink interval is 1 second (1 Hz).

Chapter 3

Troubleshooting

This chapter describes how to determine and confirm the cause if an error occurs.

- Suspected Failure Conditions
- Determining the Causes of Individual Failures
- Identifying a Failure
- Locating the PCI Expansion Unit Requiring Maintenance

3.1 Suspected Failure Conditions

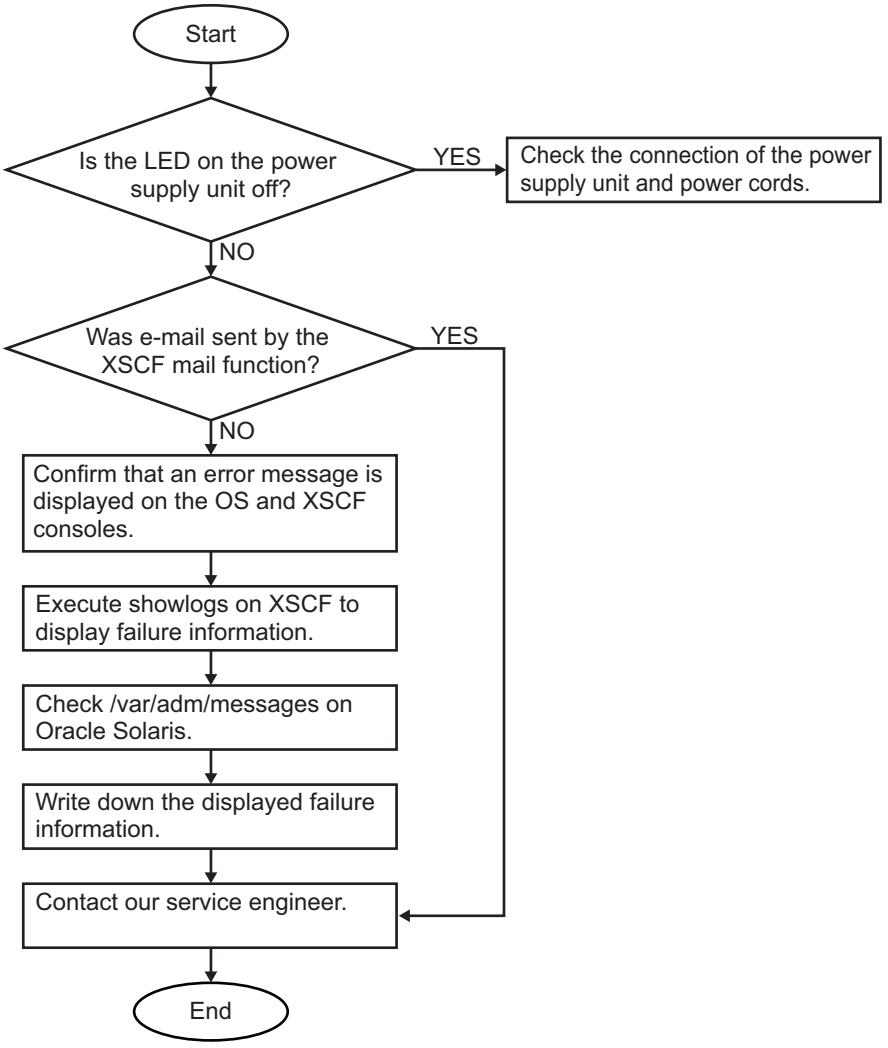
This section explains suspected failure conditions. Use the flow to determine the cause of a failure and identify the failure location in the following cases. For details on the flow for determining the cause of a failure, see "3.2 Determining the Causes of Individual Failures."

- When the CHECK LED is on
- When an error message is displayed on the console
- When an error is displayed as a result of executing a command for checking the status
- When an error is displayed in the error log

3.2 Determining the Causes of Individual Failures

This section explains the flow for determining the causes of failures.

Figure 3-1 Troubleshooting flow



3.3 Identifying a Failure

This section explains the method for identifying a failure. Use the flow described in "3.2 Determining the Causes of Individual Failures" to determine the appropriate way of checking for a failure.

3.3.1 Checking the LED indications

Identify the component requiring maintenance by checking the LEDs on both the front and rear panels of the PCI expansion unit, and the LEDs on the link card of the server to which the PCI expansion unit is connected. To maintain a component, determine its status from the LEDs and then start the maintenance work.

- LEDs on front of PCI expansion unit
  The status of the PCI expansion unit or fan unit can be determined by checking the LED or CHECK LED on the respective devices. For details, see "2.2.1 Front LEDs on the PCI expansion unit."
- LEDs on rear of PCI expansion unit
  By checking the LEDs mounted on the components that can be maintained, the status of each component or the error location can be determined. For details, see "2.2.2 LEDs on rear of PCI expansion unit."
- LEDs on link card
  Check the LED on the link card of the server to which the PCI expansion unit is connected. For details, see "2.2.3 LEDs on link card."

3.3.2 Checking error messages

Display the error messages to check the log information and obtain an error overview. You can use either of the following two methods to check the error messages:

- Checking the error log information with the XSCF shell
  For details, see "12.1 Checking a Log Saved by the XSCF" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.
- Checking messages with Oracle Solaris
  For details, see "12.2 Checking Warning and Notification Messages" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

3.3.3 Checking the status

Execute the command to check the status of the PCI expansion unit, PCI Express (PCIe) card, or the system.
Table 3-1 lists the commands for checking the status.

Table 3-1 Status check command

Type	Command	Description
XSCF	ioxadm	Displays information on the PCI expansion unit. The system administrator and service engineer can manage the PCI expansion unit by executing the ioxadm command.

Table 3-1 Status check command *(continued)*

Type	Command	Description
OpenBoot PROM	show-devs	Displays device tree information on the PCIe card and other devices connected to the host. Execute this command from the ok prompt.
Oracle Solaris	prtdiag	Displays the system configuration and all Field Replaceable Units (FRUs) that have experienced failures. Execute this command from the Oracle Solaris super-user prompt. "FRU" refers to any component that can be replaced by a field engineer.

The command execution examples shown here are based on the assumption that PCIe cards are inserted into all of the slots.

ioxadm command

Execute the ioxadm command to determine the environmental conditions (temperature, voltage, etc.) or LED indications of the PCI expansion unit.

1. **Log in to the XSCF shell.**
2. **Execute the ioxadm command to check the environmental conditions of the specified PCI expansion unit.**
   The following example shows the environmental conditions for the PCIBOX#2008 "2008" is the last four digits of the serial number of the PCI expansion unit.

```
XSCF> ioxadm env -te PCIBOX#2008
Location                  Sensor            Value Resolution Units
PCIBOX#2008               AIRFLOW         180.000      0.000 CHM
PCIBOX#2008               P_CONSUMPTION    68.000      0.000 W
PCIBOX#2008/PSU#0         FAN            3936.000      0.000 RPM
PCIBOX#2008/PSU#1         FAN            3584.000      0.000 RPM
PCIBOX#2008/FAN#0         FAN            3374.000      0.000 RPM
PCIBOX#2008/FAN#1         FAN            3374.000      0.000 RPM
PCIBOX#2008/FAN#2         FAN            3374.000      0.000 RPM
PCIBOX#2008/IOB           T_INTAKE         26.000      0.000 C
PCIBOX#2008/IOB           T_PART_NO0       31.500      0.000 C
PCIBOX#2008/IOB           T_PART_NO1       30.750      0.000 C
PCIBOX#2008/IOB           T_PART_NO2       31.500      0.000 C
PCIBOX#2008/IOB           V_12_0V          12.069      0.000 V
PCIBOX#2008/IOB           V_3_3_NO0         3.293      0.000 V
PCIBOX#2008/IOB           V_3_3_NO1         3.295      0.000 V
PCIBOX#2008/IOB           V_3_3_NO2         3.291      0.000 V
PCIBOX#2008/IOB           V_3_3_NO3         3.300      0.000 V
PCIBOX#2008/IOB           V_1_8V            1.804      0.000 V
PCIBOX#2008/IOB           V_0_9V            0.900      0.000 V
```

show-devs command

Execute the show-devs command of OpenBoot PROM to display the path from the host server to the PCIe card on the I/O board.

1. **Display the ok prompt.**
2. **Execute the show-devs command to check the device tree information.**

```
{0} ok show-devs
/pci-performance-counters@8100
/pci-performance-counters@8000
/pci@8100
/pci@8000
/cpu@1f
/cpu@1e
/cpu@1d
/cpu@1c
/cpu@1b
/cpu@1a
/cpu@19
/cpu@18
/cpu@17
/cpu@16
/cpu@15
/cpu@14
/cpu@13
/cpu@12
/cpu@11
/cpu@10
/cpu@f
/cpu@e
/cpu@d
/cpu@c
/cpu@b
/cpu@a
/cpu@9
/cpu@8
/cpu@7
/cpu@6
/cpu@5
/cpu@4
/cpu@3
/cpu@2
/cpu@1
/cpu@0
/virtual-devices@100
/iscsi-hba
/virtual-memory
/memory@m7e00,60000000
/aliases
/options
/openprom
/chosen
/packages
/pci@8100/pci@4
/pci@8100/pci@4/pci@0
/pci@8100/pci@4/pci@0/pci@9
/pci@8100/pci@4/pci@0/pci@1
/pci@8100/pci@4/pci@0/pci@0
```

```
/pci@8100/pci@4/pci@0/pci@0/network@0,1
/pci@8100/pci@4/pci@0/pci@0/network@0
/pci@8000/pci@4
/pci@8000/pci@4/pci@0
/pci@8000/pci@4/pci@0/pci@8
/pci@8000/pci@4/pci@0/pci@2
/pci@8000/pci@4/pci@0/pci@1
/pci@8000/pci@4/pci@0/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@11
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@8
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@1
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@11/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@11/pci@0/pci@11
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@11/pci@0/pci@10
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@11/pci@0/pci@1
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@11/pci@0/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10/pci@0/pci@11
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10/pci@0/pci@10
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10/pci@0/pci@1
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10/pci@0/pci@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10/pci@0/pci@1/
FJSV,eulsa@0
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10/pci@0/pci@1/
FJSV,eulsa@0/tape
/pci@8000/pci@4/pci@0/pci@8/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10/pci@0/pci@1/
FJSV,eulsa@0/disk
/pci@8000/pci@4/pci@0/pci@2/pci@0
/pci@8000/pci@4/pci@0/pci@2/pci@0/usb@4,1
/pci@8000/pci@4/pci@0/pci@2/pci@0/usb@4
/pci@8000/pci@4/pci@0/pci@1/network@0,1
/pci@8000/pci@4/pci@0/pci@1/network@0
/pci@8000/pci@4/pci@0/pci@0/scsi@0
/pci@8000/pci@4/pci@0/pci@0/scsi@0/disk
/pci@8000/pci@4/pci@0/pci@0/scsi@0/tape
/virtual-devices@100/channel-devices@200
/virtual-devices@100/flashprom@0
/virtual-devices@100/rtc@5
/virtual-devices@100/console@1
/virtual-devices@100/channel-devices@200/virtual-domain-service@0
/virtual-devices@100/channel-devices@200/virtual-channel@3
/virtual-devices@100/channel-devices@200/virtual-channel-client@2
/virtual-devices@100/channel-devices@200/virtual-channel-client@1
/virtual-devices@100/channel-devices@200/virtual-channel@0
/iscsi-hba/disk
/openprom/client-services
/packages/obp-tftp
/packages/kbd-translator
```

```
/packages/SUNW,asr
/packages/dropins
/packages/terminal-emulator
/packages/disk-label
/packages/deblocker
/packages/SUNW,probe-error-handler
/packages/SUNW,builtin-drivers
{0} ok
```

prtdiag command

Execute the prtdiag(1M) command of Oracle Solaris to determine the system configuration and any failed FRUs.

1. **Display the Oracle Solaris super-user prompt.**
2. **Execute the prtdiag(1) command to determine the system configuration and any failed FRUs.**

```
# prtdiag -v
System Configuration:  Oracle Corporation  sun4v SPARC M10-4
Memory size: 64000 Megabytes

------------------------Omitted------------------------

================================ IO Devices ================================
Slot +            Bus   Name +                              Model      Speed
Status            Type  Path
----------------------------------------------------------------------------
/BB0/CMUL/SASHBA  PCIE  scsi-pciex1000,87                    LSI,2308_2 5.0GTx8
                        /pci@8000/pci@4/pci@0/pci@0/scsi@0
/BB0/CMUL/NET0    PCIE  network-pciex14e4,1656                           2.5GTx1
                        /pci@8000/pci@4/pci@0/pci@9/network@0
/BB0/CMUL/NET1    PCIE  network-pciex14e4,1656                           2.5GTx1
                        /pci@8000/pci@4/pci@0/pci@9/network@0,1
/BB0/CMUL/NET2    PCIE  network-pciex14e4,1656                           2.5GTx1
                        /pci@8000/pci@4/pci@0/pci@a/network@0
/BB0/CMUL/NET3    PCIE  network-pciex14e4,1656                           2.5GTx1
                        /pci@8000/pci@4/pci@0/pci@a/network@0,1

------------------------Omitted------------------------

Chassis Serial Number
---------------------
2081203001
#
```

3.3.4 Checking log information

Execute the showlogs command to check the error log information.

1. **Log in to the XSCF shell.**

2. **Execute the showlogs command to determine the error log information.**
   The log information is listed in the order of date, with the oldest appearing first.

   The following example shows that an Alarm status occurred in PSU#1 and PSU#2 at 12:45:31 on Oct 20, the Alarm status changed to a Warning status at 15:45:31 on the same day, and then the Alarm status further expanded to PSU#1, PSU#2, and PSU#3 at 17:45:31 on the same day.

```
XSCF> showlogs error
Date: Oct 20 12:45:31 JST 2012
    Code: 00112233-445566778899aabbcc-8899aabbcceeff0011223344
    Status: Alarm                 Occurred: Oct 20 12:45:31.000 JST 2012
    FRU: PSU#1,PSU#2
    Msg: ACFAIL occurred (ACS=3)(FEP type = A1)
Date: Oct 20 15:45:31 JST 2012
    Code: 00112233-445566778899aabbcc-8899aabbcceeff0011223344
    Status: Warning               Occurred: Oct 20 15:45:31.000 JST 2012
    FRU: PSU#1,PSU#2
    Msg: ACFAIL occurred (ACS=3)(FEP type = A1)
Date: Oct 20 17:45:31 JST 2012
    Code: 00112233-445566778899aabbcc-8899aabbcceeff0011223344
    Status: Alarm                 Occurred: Oct 20 17:45:31.000 JST 2012
    FRU: PSU#1,PSU#2, PSU#3,*
    Msg: ACFAIL occurred (ACS=3)(FEP type = A1)
```

3.4 Locating the PCI Expansion Unit Requiring Maintenance

This section describes the procedure for locating a PCI expansion unit requiring maintenance by causing the CHECK LED (locator) on the front panel of the chassis to blink.
Execute the ioxadm command of the XSCF firmware to cause the CHECK LED for the PCI expansion unit requiring maintenance to blink to locate it. For details on the location of the CHECK LED and the procedure for checking it, see "2.2.1 Front LEDs on the PCI expansion unit."

1. **Log in to the XSCF shell.**
2. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink to locate it.**
   In the following example, the CHECK LED of PCIBOX#2008 is specified.

```
XSCF> ioxadm locator on PCIBOX#2008
Location Sensor Value Resolution Units
PCIBOX#2008 LOCATE Blink - LED
PCIBOX#2008/FAN#0 SERVICE Blink - LED
```

Chapter 4

Preparing for Maintenance

This chapter describes the preparations that must be completed prior to performing any maintenance, as well as the types of maintenance.

- Preparing Tools Required for Maintenance
- Understanding Types of Maintenance
- Precautions for Maintenance

4.1 Preparing Tools Required for Maintenance

This section explains the tools required for maintenance. Table 4-1 lists the tools required for maintenance.

Table 4-1 Maintenance tools

Item	Use
Phillips screwdriver (No.2)	Removing or replacing screws
Wrist strap	For grounding static electricity
ESD mat	For grounding static electricity

4.2 Understanding Types of Maintenance

This section describes the maintenance types for the PCI expansion unit.
The terms used in this manual are defined as follows:

Table 4-2 Term definitions

Term	Definition
Physical partition requiring maintenance	Physical partition to which the PCI expansion unit containing the Field Replaceable Unit (FRU) requiring maintenance belongs
PCI expansion unit requiring maintenance	Chassis of the PCI expansion unit containing the Field Replaceable Unit (FRU) requiring maintenance

4.2.1 Maintenance types of the PCI expansion unit

The maintenance type of the PCI expansion unit differs depending on whether the SPARC M10 system of the destination of the PCI expansion unit has a single-unit configuration or a building block configuration.

- A single-unit configuration is that configuration in which one SPARC M10-1, SPARC M10-4, or SPARC M10-4S is used. This configuration uses only one physical partition. So, the status in which the physical partition requiring maintenance stops is equivalent to that in which the entire system stops.
- A building block configuration is that configuration in which two or more SPARC M10-4Ss are used.

Maintenance types when the destination of the PCI expansion unit has a single-unit configuration

Suppose that the destination of the PCI expansion unit has a single-unit configuration. In this case, the following four maintenance types can be applied depending on the combinations of the statuses of the physical partition requiring maintenance and the input power statuses of the chassis requiring maintenance.

Table 4-3 Maintenance types when the destination of the PCI expansion unit has a single-unit configuration

Status of the physical partition to which the PCI expansion unit requiring maintenance belongs	Input power status of the PCI expansion unit requiring maintenance	Type of maintenance
Active Status in which Oracle Solaris is operating during maintenance	Hot Status in which the power cord of the PCI expansion unit remains connected	Active/hot maintenance
	Cold Status in which the power cord of the PCI expansion unit has been disconnected	Active/cold maintenance
Inactive (system stopped) Status in which all physical partitions stop, in addition to the physical partition requiring maintenance	Hot Status in which the power cord of the PCI expansion unit remains connected	System stopped/hot maintenance
	Cold Status in which the power cord of the PCI expansion unit has been disconnected	System stopped/cold maintenance

The following details each maintenance type.

Active/hot maintenance

Maintenance is performed while Oracle Solaris is in operation in the physical partition. The power cord of the PCI expansion unit requiring maintenance remains connected.

The following FRUs of the PCI expansion unit are subject to active/hot maintenance.

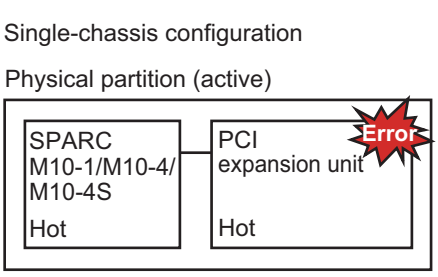
- Redundant power supply unit
- Fan unit
- PCIe card that can use the PCI hot plug (PHP)

In a single-unit configuration of SPARC M10-4 or M10-4S, the following FRUs of the PCI expansion unit can also be subject to active/hot maintenance. This can be done after releasing the link card mounted in the server of the destination from the system by using the PCI hot plug (PHP).

- Link board
- Link cable and management cable

Note - If the setting of the direct I/O function is enabled, the link card cannot use PHP. Perform maintenance with the system stopped.

Figure 4-1 Active/hot maintenance



Active/cold maintenance

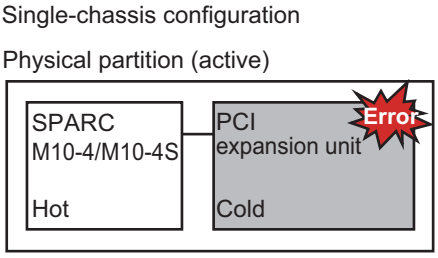
Maintenance is performed while Oracle Solaris is operating in the physical partition. The power cord of the PCI expansion unit requiring maintenance has been disconnected.
In a single-unit configuration of SPARC M10-4 or M10-4S, the power cord of the PCI expansion unit can be disconnected by releasing the link card mounted on the server from the system. To release the link card from the system, use the PCI hot plug (PHP).

The following FRUs of the PCI expansion unit are subject to active/cold maintenance.

- All FRUs

Note - If the setting of the direct I/O function is enabled, the link card cannot use PHP. Perform maintenance with the system stopped.

Figure 4-2 Active/cold maintenance



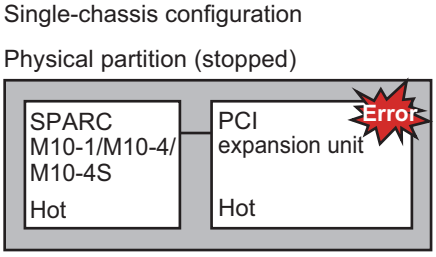
System stopped/hot maintenance

Maintenance is performed while all physical partitions on the system are powered off. The power cord of the PCI expansion unit requiring maintenance remains connected.

The following FRUs of the PCI expansion unit are subject to system stopped/hot maintenance.

- PCIe card
- Link board
- Power supply unit and fan unit
- Link cable and management cable

Figure 4-3 System stopped/hot maintenance



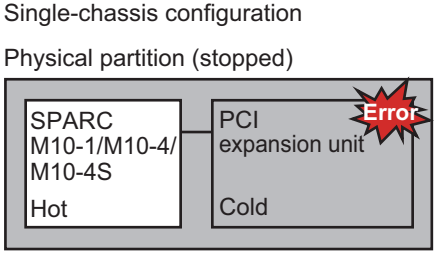
System stopped/cold maintenance

Maintenance is performed while all physical partitions on the system are powered off. The power cord of the PCI expansion unit requiring maintenance has been disconnected.

The following FRUs of the PCI expansion unit are subject to system stopped/cold maintenance.

- All FRUs

Figure 4-4 System stopped/cold maintenance



The maintenance types that can be used for each FRU are as follows. The maintenance type depends on the type of the server that is a destination of the PCI expansion unit.

Table 4-4 Whether supported when the connection destination is SPARC M10-1

-: Not maintainable

FRU	Active/hot	System stopped/hot	System stopped/cold	Reference
PCI Express card	Enabled (*1)	Enabled	Enabled	Chapter 7
Link board	-	Enabled	Enabled	Chapter 8
Link card (mounted on server)	-	Enabled	Enabled	Chapter 9
Link cable	-	Enabled	Enabled	Chapter 10
Management cable	-	Enabled	Enabled	Chapter 11
Power supply unit	Enabled (*2)	Enabled	Enabled	Chapter 12
Fan unit	Enabled	Enabled	Enabled	Chapter 13
PCI tray	-	-	Enabled	Chapter 14
I/O board	-	-	Enabled	Chapter 15
Fan backplane	-	-	Enabled	Chapter 16

*1: The maintenance work is performed using the PCI hot plug (PHP). While referring to "4.2.2 Checking whether the PCI hot plug (PHP) can be used," check whether PHP is usable.

*2: This is supported only for a redundant configuration.

Table 4-5 When the destination has a single-unit configuration of SPARC M10-4 or M10-4S

-: Not maintainable

FRU	Active/hot	Active/cold	System stopped/ hot	System stopped/ cold	Reference
PCI Express card	Enabled (*1)	Enabled (*2)	Enabled	Enabled	Chapter 7
Link board	Enabled (*2)	Enabled (*2)	Enabled	Enabled	Chapter 8
Link card (mounted on server)	Enabled (*2)	-	Enabled	Enabled	Chapter 9
Link cable	Enabled (*2)	Enabled (*2)	Enabled	Enabled	Chapter 10
Management cable	Enabled (*2)	Enabled (*2)	Enabled	Enabled	Chapter 11
Power supply unit	Enabled (*3)	Enabled (*2)	Enabled	Enabled	Chapter 12
Fan unit	Enabled	Enabled (*2)	Enabled	Enabled	Chapter 13
PCI tray	-	Enabled (*2)	-	Enabled	Chapter 14
I/O board	-	Enabled (*2)	-	Enabled	Chapter 15
Fan backplane	-	Enabled (*2)	-	Enabled	Chapter 16

*1: The maintenance work is performed using the PCI hot plug (PHP). While referring to "4.2.2 Checking whether the PCI hot plug (PHP) can be used," check whether PHP is usable. In combination with the dynamic SR-IOV or the dynamic reconfiguration function of the PCIe endpoint device, PHP can also enable the SR-IOV virtual function or the active maintenance of the PCIe card assigned to an I/O domain as a PCIe endpoint. For details, see Table 4-6.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*3: This is supported only for a redundant configuration.

Table 4-6 Maintenance type for the PCIe card of the PCI expansion unit (When the destination server has a single-unit configuration)

-: Not maintainable

Domain to which the PCI expansion unit belongs	PCIe card requiring maintenance			PCI card maintenance type	
	Direct I/O (*1)	PHP support	SR-IOV (*2)	Active/hot (use pf PHP)	System stopped
Control domain	Unsupported	Supported	Unsupported/ supported	Enabled (*3) (*5)	Enabled
	Unsupported	Unsupported	Unsupported/ supported	-	Enabled
	Supported	Unsupported	Unsupported	-	Enabled
	Supported	Supported	Unsupported	Enabled (*6)	Enabled
Root domain	Unsupported	Supported	Unsupported	Enabled (*4)	Enabled
	Unsupported	Supported	Unsupported/ supported	Enabled (*4) (*5)	Enabled

Table 4-6 Maintenance type for the PCIe card of the PCI expansion unit (When the destination server has a single-unit configuration) *(continued)*

-: Not maintainable

Domain to which the PCI expansion unit belongs	PCIe card requiring maintenance			PCI card maintenance type	
	Direct I/O (*1)	PHP support	SR-IOV (*2)	Active/hot (use pf PHP)	System stopped
	Unsupported	Unsupported	Unsupported/ supported	-	Enabled
	Supported	Unsupported	Unsupported/ supported	-	Enabled
	Supported	Supported	Unsupported	Enabled (*4) (*6)	Enabled

*1: This refers to a state in which the PCIe card of the PCI expansion unit is assigned to a logical domain through the use of the direct I/O.
*2: For details on whether to use the SR-IOV function, see "4.2.3 Checking whether the SR-IOV function is used."
*3: Execute PHP from the control domain.
*4: Execute PHP from the root domain.
*5: The PHP function provided when the SR-IOV function is used is supported by Oracle VM Server for SPARC 3.1 or later.
*6: Use the dynamic reconfiguration function of the PCIe endpoint device to return from the I/O domain of direct I/O to the control domain or root, and then execute PHP. The dynamic reconfiguration function of the PCIe endpoint device is supported by Oracle VM Server for SPARC 3.1.1.1 or later.

Maintenance type when the destination of the PCI expansion unit has a building block configuration

Suppose that the destination of the PCI expansion unit has a building block configuration. In this case, the following six maintenance types can be applied depending on the combinations of the statuses of the physical partition requiring maintenance and the input power statuses of the chassis requiring maintenance.

Table 4-7 Maintenance type when the destination of the PCI expansion unit has a building block configuration

Status of the physical partition to which the PCI expansion unit requiring maintenance belongs	Input power status of the PCI expansion unit requiring maintenance	Type of maintenance
Active Status in which Oracle Solaris is operating during maintenance	Hot Status in which the power cord of the PCI expansion unit remains connected	Active/hot maintenance
	Cold Status in which the power cord of the PCI expansion unit has been disconnected	Active/cold maintenance
Inactive Status in which the physical partition requiring maintenance stops during maintenance	Hot Status in which the power cord of the PCI expansion unit remains connected	Inactive/hot maintenance
	Cold Status in which the power cord of the PCI expansion unit has been disconnected	Inactive/cold maintenance
System stopped Status in which all physical partitions stop as well as the physical partition requiring maintenance	Hot Status in which the power cord of the PCI expansion unit remains connected	System stopped/hot maintenance
	Cold Status in which the power cord of the PCI expansion unit has been disconnected	System stopped/cold maintenance

The following details each maintenance type.

Active/hot maintenance

Maintenance is performed while Oracle Solaris is operating in the physical partition. The power cord of the PCI expansion unit requiring maintenance remains connected.

The following FRUs of the PCI expansion unit are subject to active/hot maintenance.

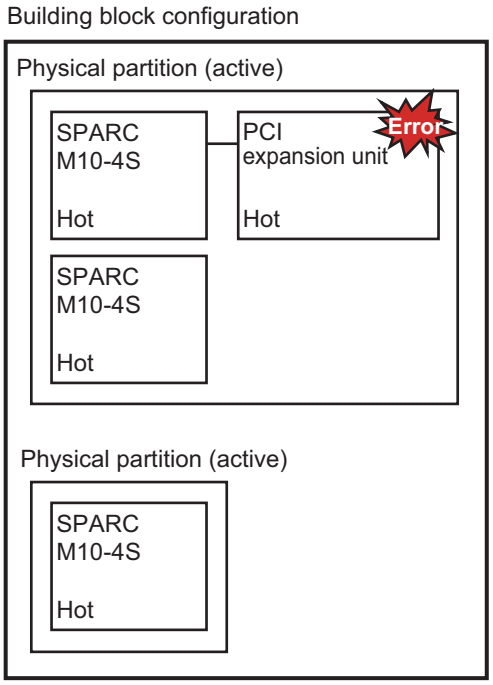
- Redundant power supply unit
- Fan unit
- PCIe card that can use the PCI hot plug (PHP)

The following FRUs of the PCI expansion unit can also be subject to active/hot maintenance. This can be done after releasing the link card mounted in the server of the destination from the system using the PCI hot plug (PHP).

- Link board
- Link cable and management cable

Note - If the setting of the direct I/O function is enabled, the link card cannot use PHP. Release the link card from the system using physical partition DR.

Figure 4-5 Active/hot maintenance



Active/cold maintenance

Maintenance is performed while Oracle Solaris is operating in the physical partition. The power cord of the PCI expansion unit requiring maintenance has been disconnected.
The power cord of the PCI expansion unit can be disconnected by releasing the link card mounted on the server from the system. The link card is released from the system using either of the following methods: Using the PCI hot plug (PHP) and using physical partition dynamic reconfiguration (DR).

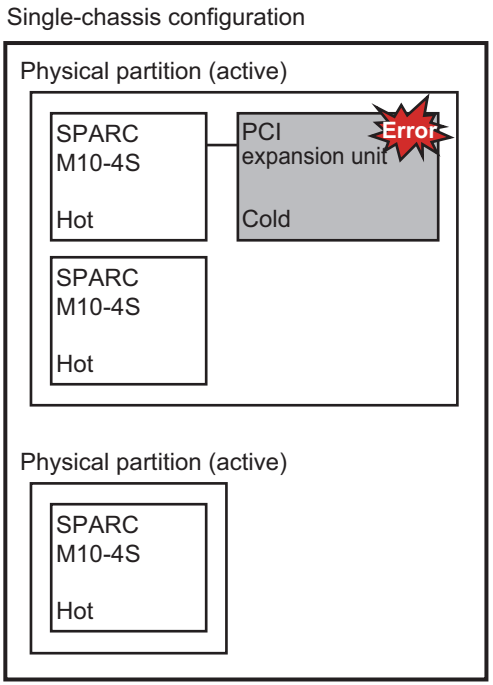
The following FRUs of the PCI expansion unit are subject to active/cold maintenance.

- All FRUs

Note - If the setting of the direct I/O function is enabled, the link card cannot use PHP. Release the link card from the system using the dynamic reconfiguration (DR) of the physical partition.

Note - To use the physical partition dynamic reconfiguration (DR) function, logical domains must be configured in advance by referring to "2.5 Dynamic Reconfiguration Conditions and Settings" in the *Fujitsu M10/SPARC M10 Systems Domain Configuration Guide*.

Figure 4-6 Active/cold maintenance



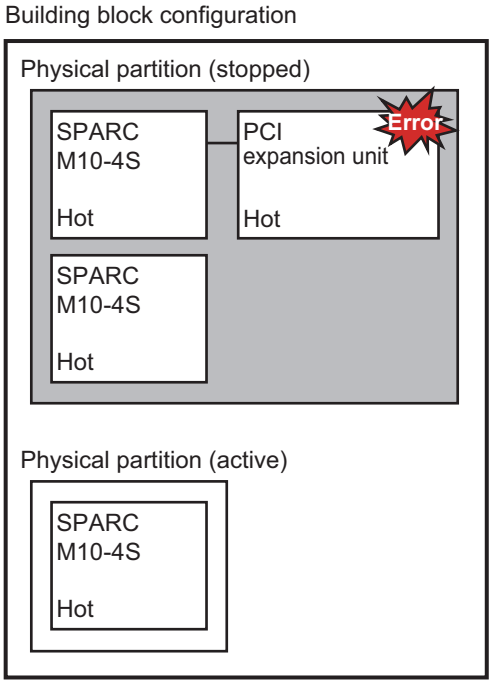
Inactive/hot maintenance

Maintenance is performed while the physical partition to which the PCI expansion unit requiring maintenance belongs is powered off. The power cord of the PCI expansion unit containing the FRU requiring maintenance remains connected.

The following FRUs of the PCI expansion unit are subject to inactive/hot maintenance.

- PCIe card
- Link board
- Power supply unit and fan unit
- Link cable and management cable

Figure 4-7 Inactive/hot maintenance



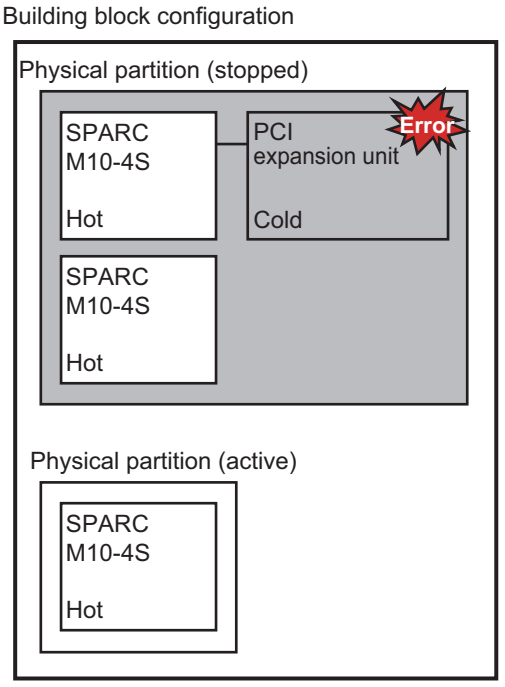
Inactive/cold maintenance

Maintenance is performed while the physical partition to which the PCI expansion unit requiring maintenance belongs is powered off. The power cord of the PCI expansion unit requiring maintenance has been disconnected.

The following FRUs of the PCI expansion unit are subject to inactive/cold maintenance.

- All FRUs

Figure 4-8 Inactive/cold maintenance



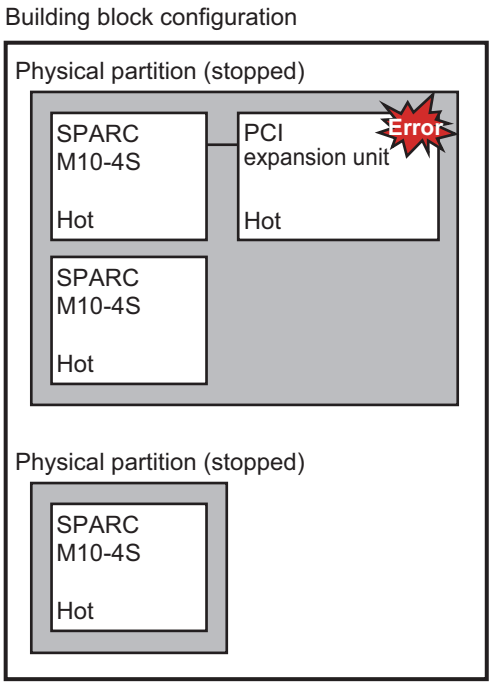
System stopped/hot maintenance

Maintenance is performed while all physical partitions on the system are powered off. The power cord of the PCI expansion unit requiring maintenance remains connected.

The following FRUs of the PCI expansion unit are subject to system stopped/hot maintenance.

- PCIe card
- Link board
- Power supply unit and fan unit
- Link cable and management cable

Figure 4-9 System stopped/hot maintenance



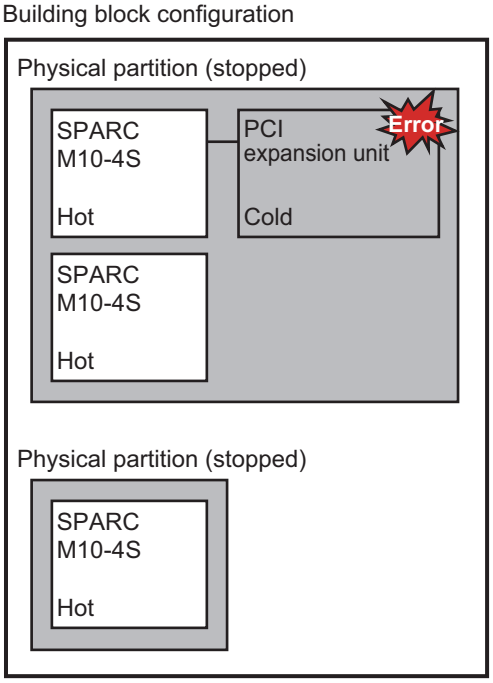
System stopped/cold maintenance

Maintenance is performed while all physical partitions on the system are powered off. The power cord of the PCI expansion unit requiring maintenance has been disconnected.

The following FRUs of the PCI expansion unit are subject to system stopped/cold maintenance.

- All FRUs

Figure 4-10 System stopped/cold maintenance



The maintenance types that can be used for each FRU are as follows:

Table 4-8 When the destination has an SPARC M10-4S building block configuration

-: Not maintainable

FRU	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold	Reference
PCI Express card	Enabled (*1)	Enabled (*2)	Enabled	Enabled	Enabled	Enabled	Chapter 7
Link board	Enabled (*2)	Enabled (*2)	Enabled	Enabled	Enabled	Enabled	Chapter 8
Link card (mounted on server)	Enabled (*2)	-	Enabled	Enabled	Enabled	Enabled	Chapter 9
Link cable	Enabled (*2)	Enabled (*2)	Enabled	Enabled	Enabled	Enabled	Chapter 10
Management cable	Enabled (*2)	Enabled (*2)	Enabled	Enabled	Enabled	Enabled	Chapter 11
Power supply unit	Enabled (*3)	Enabled (*2)	Enabled	Enabled	Enabled	Enabled	Chapter 12
Fan unit	Enabled	Enabled (*2)	Enabled	Enabled	Enabled	Enabled	Chapter 13
PCI tray	-	Enabled (*2)	-	Enabled	-	Enabled	Chapter 14
I/O board	-	Enabled (*2)	-	Enabled	-	Enabled	Chapter 15
Fan backplane	-	Enabled (*2)	-	Enabled	-	Enabled	Chapter 16

*1: The maintenance work is performed using the PCI hot plug (PHP). While referring to "4.2.2 Checking whether the PCI hot plug (PHP) can be used," check whether PHP is usable. In combination with the dynamic SR-IOV or the dynamic reconfiguration function of the PCIe endpoint device, PHP can also enable the SR-IOV virtual function or the active maintenance of the PCIe card assigned to an I/O domain as a PCIe endpoint. For details, see Table 4-9.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, the link card cannot use PHP. Using physical partition dynamic reconfiguration (DR), release the link card from the system.

*3: This is supported only for a redundant configuration.

Table 4-9 Maintenance type for the PCIe card of the PCI expansion unit (When the destination server has a building block configuration)

-: Not maintainable

Domain to which the PCI expansion unit belongs	PCIe card requiring maintenance			Maintenance types of the PCIe card		
	Direct I/O (*1)	PHP support	SR-IOV function (*2)	Active/hot (Use of PHP)	Active/hot (Use of DR)	System stopped
Control domain	Unsupported	Supported	Unsupported /supported	Enabled (*3) (*8)	-	Enabled
	Unsupported	Unsupported	Unsupported /supported	-	-	Enabled
	Supported	Unsupported	Unsupported	-	-	Enabled
	Supported	Supported	Unsupported	Enabled (*9)	-	Enabled
Root domain	Unsupported	Supported	Unsupported	Enabled (*4)	Enabled (*5)	Enabled
	Unsupported	Supported	Supported	Enabled (*4) (*8)	Enabled (*6)	Enabled
	Unsupported	Unsupported	Unsupported	-	Enabled (*5)	Enabled
	Unsupported	Unsupported	Supported	-	Enabled (*6)	Enabled
	Supported	Unsupported	Unsupported	-	Enabled (*7)	Enabled
	Supported	Supported	Unsupported	Enabled (*9)	Enabled (*7)	Enabled

*1: This refers to a state in which the PCIe card of the PCI expansion unit is assigned to a logical domain through the use of the direct I/O.
*2: For details on whether to use the SR-IOV function, see "4.2.3 Checking whether the SR-IOV function is used."
*3: Execute PHP from the control domain.
*4: Execute PHP from the root domain.
*5: Stop the root domain and execute the dynamic reconfiguration of the physical partition (DR).
*6: Stop the I/O domain of the virtual function (VF) of the SR-IOV function, stop the root domain, delete and discard the VF of the SR-IOV function, and then execute physical partition dynamic reconfiguration (DR).
*7: Stop the I/O domain of direct I/O, stop the root domain, delete the I/O device, and then execute physical partition dynamic reconfiguration (DR).
*8: The PHP function provided when the SR-IOV function is used is supported by Oracle VM Server for SPARC 3.1 or later.
*9: Use the dynamic reconfiguration function of the PCIe endpoint device to return from the I/O domain of the direct I/O to the control domain or root, and then execute PHP. The dynamic reconfiguration function of the PCIe endpoint device is supported by Oracle VM Server for SPARC 3.1.1.1 or later.

4.2.2 Checking whether the PCI hot plug (PHP) can be used

Using PHP, maintenance for the PCIe card mounted on the PCI expansion unit or the link card mounted on the server can be performed during Oracle Solaris operation. This section enables you to check whether the PCIe card or link card requiring maintenance can use PHP.

Note - Some PCIe cards do not support PHP. For details, see "Appendix A Cards that Support PCI Hot Plug and Dynamic Reconfiguration" in the *Fujitsu M10/SPARC M10 Systems PCI Card Installation Guide*.

Note - If the setting of the direct I/O function is enabled, the link card cannot use PHP.

1. **Log in to the XSCF shell.**
2. **Execute the showlogs command to identify the PCIe card requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

3. **Check the hardware and software configurations.**
For details, see "Confirming the System Configuration" in the *Fujitsu M10-1/SPARC M10-1 Service Manual* or the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.
4. **Execute the ldm list-io -l command to check the logical domain to which the PCIe card requiring maintenance is assigned and the logical domain to which the PCIe root complex to which that PCIe card belongs is assigned.**

```
# ldm list-io -l
NAME                                      TYPE   BUS      DOMAIN   STATUS
----                                      ----   ---      ------   ------
PCIE0                                     BUS    PCIE0    primary
[pci@8000]
PCIE1                                     BUS    PCIE1    primary       <--(*1)
[pci@8100]
PCIE2                                     BUS    PCIE2    primary  IOV  <--(*2)
[pci@8200]
PCIE3                                     BUS    PCIE3    rootdom       <--(*3)
[pci@8300]
PCIE4                                     BUS    PCIE4    primary
[pci@8400]
PCIE5                                     BUS    PCIE5    primary  IOV
[pci@8500]
PCIE6                                     BUS    PCIE6    rootdom  IOV  <--(*4)
[pci@8600]
PCIE7                                     BUS    PCIE7    primary  IOV
[pci@8700]
/BB0/CMUL/NET0                            PCIE   PCIE0    primary  OCC
[pci@8000/pci@4/pci@0/pci@9]
network@0
network@0,1
/BB0/CMUL/SASHBA                          PCIE   PCIE0    primary  OCC
[pci@8000/pci@4/pci@0/pci@0]
scsi@0/iport@f/disk@w50000393a82368b2,0
scsi@0/iport@f/smp@w500000e0e06d03bf
scsi@0/iport@f/enclosure@w500000e0e06d03bd,0
scsi@0/iport@v0
/BB0/PCI0                                 PCIE   PCIE1    primary  OCC  <--(*5)
[pci@8100/pci@4/pci@0/pci@0]
/BB0/PCI3                                 PCIE   PCIE2    primary  EMP
[pci@8200/pci@4/pci@0/pci@0]
```

```
/BB0/PCI4                                PCIE   PCIE2    iodom1   OCC  <--(*6)
[pci@8200/pci@4/pci@0/pci@8]
/BB0/PCI7                                PCIE   PCIE3    rootdom  EMP
[pci@8300/pci@4/pci@0/pci@0]
/BB0/PCI8                                PCIE   PCIE3    rootdom  EMP  <--(*7)
[pci@8300/pci@4/pci@0/pci@8]
/BB0/CMUL/NET2                           PCIE   PCIE4    primary  OCC
[pci@8400/pci@4/pci@0/pci@a]
network@0
network@0,1
/BB0/PCI1                                PCIE   PCIE5    rootdom  EMP
[pci@8500/pci@4/pci@0/pci@8]
/BB0/PCI2                                PCIE   PCIE5    rootdom  OCC
[pci@8500/pci@4/pci@0/pci@9]
/BB0/PCI5                                PCIE   PCIE6    iodom2   OCC  <--(*8)
[pci@8600/pci@4/pci@0/pci@9]
/BB0/PCI6                                PCIE   PCIE6    rootdom  OCC
[pci@8600/pci@4/pci@0/pci@11]
/BB0/PCI9                                PCIE   PCIE7    primary  OCC
[pci@8700/pci@4/pci@0/pci@9]
/BB0/PCI10                               PCIE   PCIE7    primary  OCC
[pci@8700/pci@4/pci@0/pci@11]
```

- **Logical domain to which the PCIe card is assigned**
  The name indicated in [DOMAIN] of the slot (line where [NAME] indicates "/BBX/PCIx") of the PCIe card requiring maintenance indicates the logical domain to which that PCIe card is assigned. (*5 to *8 in the execution example)
  *5: Assignment of both /BB0/PCI0 and PCIE1 to primary
  *6: Assignment of /BB0/PCI4 to iodom1 and PCIE2 to primary
  *7: Assignment of both /BB0/PCI8 and PCIE3 to rootdom
  *8: Assignment of /BB0/PCI5 to iodom2 and PCIE6 to rootdom
- **Logical domain to which the PCIe root complex to which the PCIe card belongs is assigned**
  Name "PCIEx" indicated in [BUS] in the line confirmed above indicates the name of the PCIe root complex to which the PCIe card belongs. The name indicated in [DOMAIN] of the same PCIe root complex (line where [NAME] indicates "PCIEx") indicates the logical domain to which the PCIe root complex to which the PCIe card belongs is assigned. (*1 to *4 in the execution example)
  *1: Assignment of PCIE1 to primary
  *2: Assignment of PCIE2 to primary
  *3: Assignment of PCIE3 to rootdom
  *4: Assignment of PCIE6 to rootdom

5. **Based on the check results in step 4, determine whether PHP can be used, according to the combination of above two pieces of information.**

- Suppose that the logical domains to which the PCIe slot and PCIe root complex are assigned are both the control domains (primary). Active/hot maintenance can be performed using PHP from the control domain. (See *5 in the execution example of the ldm list-io -l command)
- Suppose that the logical domains to which the PCIe slot and PCIe root complex are assigned are not control domains and are the same logical domains (root

domains). Active/hot maintenance can be performed using PHP from the root domain. (See *7 in the execution example of the ldm list-io -l command)

- In other than above (for the I/O domain), PHP cannot be used. (See *6 and *8 in the execution example of the ldm list-io -l command)

4.2.3 Checking whether the SR-IOV function is used

This section checks whether the SR-IOV function is used.

Note - For details on the PCIe card supporting the SR-IOV function, see "Appendix B Cards that Support SR-IOV" in the *Fujitsu M10/SPARC M10 Systems PCI Card Installation Guide*.

1. **Log in to the XSCF shell.**
2. **Execute the showlogs command to identify the PCIe card requiring maintenance.**

```
XSCF> showlogs error
```

3. **Connect to the control domain console of the physical partition.**
4. **Execute the ldm list-io command to determine whether the SR-IOV function is being used.**
   "VF" displayed in [TYPE] indicates that the SR-IOV function is being used.

```
# ldm list-io
NAME                                TYPE   BUS      DOMAIN   STATUS
----                                ----   ---      ------   ------
PCIE0                               BUS    PCIE0    primary  IOV
PCIE1                               BUS    PCIE1    primary  IOV
PCIE2                               BUS    PCIE2    primary  IOV
PCIE3                               BUS    PCIE3    primary  IOV
PCIE4                               BUS    PCIE4    primary  IOV
PCIE5                               BUS    PCIE5    primary  IOV
PCIE6                               BUS    PCIE6    primary  IOV
PCIE7                               BUS    PCIE7    primary  IOV
/BB0/CMUL/NET0                      PCIE   PCIE0    primary  OCC
/BB0/CMUL/SASHBA                    PCIE   PCIE0    primary  OCC
/BB0/PCI0                           PCIE   PCIE1    primary  OCC
/BB0/PCI3                           PCIE   PCIE2    primary  EMP
/BB0/PCI4                           PCIE   PCIE2    primary  EMP
/BB0/PCI7                           PCIE   PCIE3    primary  EMP
/BB0/PCI8                           PCIE   PCIE3    primary  EMP
/BB0/CMUL/NET2                      PCIE   PCIE4    primary  OCC
/BB0/PCI1                           PCIE   PCIE5    primary  EMP
/BB0/PCI2                           PCIE   PCIE5    primary  EMP
/BB0/PCI5                           PCIE   PCIE6    primary  EMP
/BB0/PCI6                           PCIE   PCIE6    primary  EMP
/BB0/PCI9                           PCIE   PCIE7    primary  EMP
/BB0/PCI10                          PCIE   PCIE7    primary  EMP
```

```
/BB0/PCI0/IOVNET.PF0            PF     PCIE1    primary
/BB0/PCI0/IOVNET.PF1            PF     PCIE1    primary
/BB0/CMUL/NET0/IOVNET.PF0       PF     PCIE0    primary
/BB0/CMUL/NET0/IOVNET.PF1       PF     PCIE0    primary
/BB0/CMUL/NET2/IOVNET.PF1       PF     PCIE4    primary
/BB0/CMUL/NET2/IOVNET.PF0       PF     PCIE4    primary
/BB0/PCI0/IOVNET.PF0.VF0        VF     PCIE1    iodom00  <--SR-IOV function used
/BB0/PCI0/IOVNET.PF0.VF1        VF     PCIE1    iodom01  <--SR-IOV function used
/BB0/PCI0/IOVNET.PF0.VF2        VF     PCIE1    iodom02  <--SR-IOV function used
```

4.3 Precautions for Maintenance

For details on the procedure for installing a PCI expansion unit, see "1.4 Workflow when Connecting the PCI Expansion Unit" in the *Fujitsu M10/SPARC M10 Systems Installation Guide*.

Chapter 5

Understanding the Preparations for Enabling Maintenance

This chapter describes the preparations that must be completed before you can physically remove a component. See this chapter, as required, when performing the maintenance work on each component described in Chapter 7 onwards.

- Releasing the Link Card from the Server
- Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs
- Stopping the Entire System
- Accessing Components

Caution - Do not operate a Field Replaceable Unit (FRU) requiring maintenance while OpenBoot PROM is running (the ok prompt is displayed). Turn off the power to the physical partition or start Oracle Solaris to release the PCI expansion unit from the server, and then operate the FRU requiring maintenance.

5.1 Releasing the Link Card from the Server

This section describes the procedure for removing a link card mounted on the server from the system.
The link card is released from the system using either of the following methods: Using PHP and using physical partition dynamic reconfiguration (DR).

Note - If the setting of the direct I/O function is enabled, the link card cannot use PHP.

Note - To add or delete an I/O device in the control domain, enter delayed reconfiguration mode, add or delete the I/O device, and then restart the control domain.

5.1.1 Releasing the link card using PHP

This section describes the procedure for releasing the link card mounted on the server from the system, using PHP. This allows you to remove a PCI expansion unit requiring maintenance from the system.

Making the link card ready to be released

1. **Log in to the XSCF shell.**
2. **Execute the ioxadm locator command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink so that you can locate the unit.**
   You do not have to perform this step when performing maintenance on the link card mounted on a server.

   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

3. **Execute the ioxadm list command to check the BB-ID of the server to which the PCI expansion unit requiring maintenance is connected and the slot location of the link card.**
   In the following example, BB-ID of the server to which PCIBOX#12B4 is connected is "BB#01" and the link card is mounted on "BB#01 SLOT#05."

```
XSCF> ioxadm list PCIBOX#12B4
PCIBOX                  Link
PCIBOX#12B4             BB#01-PCI#05
```

4. **Execute the showboards -a command to check the PPAR-ID of the physical partition using the link card.**
   The BB-ID of the server to which the PCI expansion unit requiring maintenance is connected is displayed as a system board (PSB) number.

   In the following example, the [PPAR-ID] of PSB 01-0 is "00."

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ----------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    y    y    y    Passed  Normal
```

5. **Connect to the control domain console of the physical partition.**
6. **Execute the ldm list-io -l command to check the logical domain to which the link card requiring maintenance is assigned.**
   If the logical domains to which the PCIe slot and PCIe root complex are assigned are both the control domains (primary), the link card is assigned to the control

domain.

If the logical domains to which the PCIe slot and PCIe root complex are assigned are not the control domains (primary), the link card is assigned to the root domain.

7. **Check whether there is a guest domain that is virtually using the PCIe card mounted in the PCI expansion unit requiring maintenance.**

- For the Ethernet card
  a. Execute the ldm list-bindings <domain name> command in the control domain and check the physical network interface name ([NET-DEV] value) assigned to the virtual network switch based on the information of the virtual network switch [VSW].
  The following example specifies "rootdom," which is the name of the logical domain to which the PCIe card is assigned.

```
# ldm list-bindings rootdom
------------------------Omitted-------------------------
VSW
    NAME         MAC               NET-DEV   ID   DEVICE     LINKPROP
DEFAULT-VLAN-ID PVID ......
    vsw0         xx:xx:xx:xx:xx:xx net4(*1)   0    switch@0             1
        1
        PEER                       MAC               PVID VID
 MTU   MAXBW .....
        vnet0@guest1(*2)          xx:xx:xx:xx:xx:xx 1
1500

------------------------Omitted-------------------------
```

*1: Physical network interface

*2: Virtual network device and guest domain that are receiving the vsw0 services

b. Log in to the logical domain to which the PCIe card is assigned and then check the physical location of the above physical network interface to confirm whether that interface corresponds to the PCIe card requiring maintenance.

- For Oracle Solaris 11, execute the dladm show-phys -L command to check the [LOC] (physical location) of the physical network interface that corresponds to [NET-DEV] in step a.

```
# dladm show-phys -L
LINK              DEVICE       LOC
net0              igb0         /BB0/CMUL
net1              igb1         /BB0/CMUL
net2              igb2         /BB0/CMUU
net3              igb3         /BB0/CMUU
net4              ixgbe0       BB#0-PCI#0  <--*
net5              ixgbe1       BB#0-PCI#0
```

- For Oracle Solaris 10, check the physical device path from the /etc/path_to_inst command and compare that path with the physical device path

displayed with the idm list-io -l command to check the physical location.

c. Suppose that steps a and b indicate that there is a virtual network switch to which the PCIe card requiring maintenance is assigned. While referring to the [PEER] section of the virtual network switch indicated in step a, check the virtual network device and guest domain that use the service of that virtual network switch.
The display format is "<virtual network device>@<guest domain>."

- For the SAS or FibreChannel card
  a. Execute the ldm list-bindings command in the control domain to check the virtual disk backend ([DEVICE] value) assigned to the virtual disk service from among virtual disk service [VDS] information.
  For the types assigned to the virtual disk backend, see "Virtual Disk Back End" in the *Oracle VM Server for SPARC Administration Guide*.
  The following example specifies "rootdom," which is the name of the logical domain to which the PCIe card is assigned.

```
# ldm list-bindings rootdom
------------------------Omitted------------------------
VDS
   NAME           VOLUME         OPTIONS          MPGROUP        DEVICE
   vds0           vol0                                           /export/
vdisks/vdisk.img (*1)
                  vol1                                           /dev/zvol/
dsk/rpool/zvdisk1
                  vol2                                           /dev/dsk/
cxtxxxxxxxxxxxxxxxdxsx
    CLIENT                        VOLUME
    vdisk1@guest1                 vol0  (*2)
    vdisk2@guest2                 vol1
    vdisk3@guest3                 vol2
------------------------Omitted------------------------
```

*1: Virtual disk backend

*2: Names of the virtual disk and guest domain to which the vol0 backend is assigned

b. Log in to the logical domain to which the PCIe card is assigned, identify the physical disk from the backend, and then identify the PCIe card in use.
For details on the step, see the documentation for the software that manages the related file system and volume.

For example, if the backend is a file on the ZFS file system, execute the zfs list command to check the ZFS storage pool corresponding to the mount point of the directory where the file is placed. Moreover, execute the zpool status <zpool name> to check the physical device path of the PCIe card to which the LU or hard disk is connected.
If MPxIO is used for management, display the device path of a physical hard disk corresponding to the LU with the mpathadm command to check the physical device path of the PCIe card connected to that path.

c. Suppose that steps a and b indicate that there is a virtual disk service to which

the PCIe card requiring maintenance is assigned. While referring to the [CLIENT] section of the virtual disk service indicated in step a, check the virtual disk and guest domain to which the backend of that virtual disk service is assigned.
The display format is "<virtual disk>@<guest domain>."

8. **If there is a guest domain that is virtually using the PCIe card mounted in the PCI expansion unit requiring maintenance, delete the virtual devices (vnet, vdisk) and virtual services (vsw, vds).**
   a. Log in to the guest domain to stop the use of the virtual device.
   If you are using the duplication function of the virtual device, release the target virtual device with the duplication function so that that virtual device is not used.
   b. Delete the virtual device and virtual service from the control domain by using the ldm command.
   If you need to restore the configuration to the original status after maintaining the PCIe card, make a note of the setting information.
   - For the virtual network

```
# ldm remove-vnet <virtual network> <guest domain>
# ldm remove-vswitch <virtual network switch>
```

   - For the virtual disk

```
# ldm remove-vdisk <virtual disk> <guest domain>
# ldm remove-vdiskserver <virtual disk service>
```

9. **Suppose that a virtual function (VF) using the the SR-IOV function has been created and assigned to the domain for the PCIe card mounted on the PCI expansion unit requiring maintenance. Delete and discard the virtual function from the control domain with the ldm(1M) command.**

In case Dynamic SR-IOV feature is used

Note - Dynamic reconfiguration of the SR-IOV virtual function is supported by a combination of XCP 2210 or later and Oracle VM Server for SPARC 3.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Execute the ldm list-io command to check whether the SR-IOV function is in use. For details, see "4.2.3 Checking whether the SR-IOV function is used."
If there is a line on which "VF" is displayed in [TYPE] of the output result, the SR-IOV function is in use. The original configuration needs to be restored after the PCIe card is maintained. So, retain the output result of the ldm list-io command.

b. Enable the hotplug service of the root domain and I/O domain.

```
# svcadm enable hotplug
```

c. Execute the ldm remove-io command to delete the virtual function (VF) assigned to the I/O domain from the I/O domain. If multiple VFs are assigned from the physical function (PF) of a single PCIe card, delete all the VFs corresponding to that PF from the I/O domain.

```
# ldm remove-io <VF name> <I/O domain name>
```

d. Execute the ldm destroy-vf command to discard the virtual function (VF). However, the VF needs to be discarded in the reverse order to that in which it was created.

```
# ldm destroy-vf <VF name>
```

In case Static SR-IOV feature is used

Execute the following procedure.

a. Execute the ldm list-io command to check whether the SR-IOV function is in use.
For details, see "4.2.3 Checking whether the SR-IOV function is used." If there is a line on which "VF" is displayed in [TYPE] of the output result, the SR-IOV function is in use. The original configuration needs to be restored after the PCIe card is maintained. So, retain the output result of the ldm list-io command.

b. Stop the I/O domain.

```
# ldm stop-domain <I/O domain name>
```

c. Execute the ldm remove-io command to delete the virtual function (VF) assigned to the I/O domain from the I/O domain. If multiple VFs are assigned from the physical function (PF) of a single PCIe card, delete all the VFs corresponding to that PF from the I/O domain.

```
# ldm remove-io <device name> <I/O domain name>
```

d. Place the root domain to which PF is assigned in delayed reconfiguration mode.

```
# ldm start-reconf <root domain name>
```

e. Execute the ldm destroy-vf command to discard the virtual function (VF). However, the VF needs to be discarded in the reverse order to that in which it was created.

```
# ldm destroy-vf <VF name>
```

f. Log in to the root domain, and then restart Oracle Solaris.

```
 # telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

Releasing the link card using PHP

1. **If the link card and PCIe card requiring maintenance belong to the root domain, connect to the console of the root domain.**
   If they belong to the control domain, this step is not necessary since the control domain console is used.
2. **Display the Oracle Solaris super-user prompt.**

Note - Execute this as a super-user.

---

3. **If the hotplug service is disabled, execute the svcadm enable hotplug command to enable the hotplug service.**

```
# svcadm enable hotplug
```

4. **Execute the cfgadm -a command to check and write down Ap_ID of the PCIe card and link card mounted in the PCI expansion unit.**

```
# cfgadm -a
```

5. **Execute the cfgadm -c command to release the link card from the logical domain.**
   Enter the Ap_ID of the link card that you noted in advance.

```
# cfgadm -c unconfigure Ap_ID
```

6. **Execute the cfgadm -c command to stop the power supply to the link card.**
   Enter the Ap_ID of the link card that you noted in advance.

```
# cfgadm -c disconnect Ap_ID
```

7. **If you have enabled the hotplug service, execute the svcadm command to return the hotplug service to the disabled state.**

```
# svcadm disable hotplug
```

5.1.2 Releasing the link card using physical partition dynamic reconfiguration (DR)

This section describes the procedure for releasing the chassis containing the link card from the physical partition using physical partition dynamic reconfiguration (DR). This allows you to remove a PCI expansion unit requiring maintenance from the system.
Physical partition dynamic reconfiguration (DR) is usable only for the building block configuration.

For details on the ldm(1M) command to be executed in each step, see the reference manuals for Oracle VM Server for SPARC 3.1 and later.

Note - For details on the versions of XCP and Oracle VM Server for SPARC/SRU supporting physical partition dynamic reconfiguration (DR), see the latest product note.

Note - To add or delete an I/O device in the control domain, enter delayed reconfiguration mode, add or delete the I/O device, and then restart the domain.
However, for a combination of XCP 2230 or later and Oracle VM Server for SPARC 3.1.1.1 or later, since the dynamic reconfiguration function of the PCIe endpoint device is supported, placing the domain in delayed reconfiguration mode and restarting the domain are unnecessary.
Enable the hotplug service before adding or deleting the I/O device.

Checking the operation statuses of the physical partition and logical domain

1. **Log in to the XSCF shell.**
2. **Execute the showpparstatus -p command to confirm the operating condition of the physical partition.**
   In the following example, the [PPAR Status] of PPAR-ID 00 is displayed as "Running", indicating that the physical partition is operating.

```
XSCF> showpparstatus -p 0
PPAR-ID         PPAR Status
00              Running
```

3. **Execute the showdomainstatus -p command to check the operation status of the logical domain.**
   In the following example, the [Status] of the logical domain with PPAR-ID 00 is displayed as "Solaris running," indicating that Oracle Solaris is operating.

```
XSCF>  showdomainstatus -p 0
Logical Domain Name   Status
primary               Solaris running
guest0                Solaris running
guest1                Solaris running
iodom0                Solaris running
iodom1                Solaris running
sdiodomain            Solaris running
sr-iodomain           Solaris running
```

4. **Connect to the control domain console of the physical partition.**

5. **Execute the ldm list-domain command to check the operation status of the logical domain.**
   The following example shows that [STATE] of the control domain, two guest domains, two root domains, one I/O domain (PCIe), and one I/O domain (SR-IOV) is displayed as "active," indicating that the logical domains are operating.

```
# ldm list-domain
NAME              STATE      FLAGS   CONS    VCPU  MEMORY   UTIL  NORM  UPTIME
primary           active     -n-cv-  UART    32    56G      0.0%  0.0%  25m
guest0            active     -n----  5002    32    16G      0.0%  0.0%  25m
guest1            active     -n----  5003    32    16G      0.0%  0.0%  25m
iodom0            active     -n--v-  5000    64    64G      0.0%  0.0%  25m
iodom1            active     -n--v-  5001    64    64G      0.0%  0.0%  25m
sdiodomain        active     -n----  5004    4     8G       0.0%  0.0%  25m
sr-iodomain       active     -n----  5005    4     8G       0.0%  0.0%  25m
```

6. **Execute the ldm list-devices -a command to check the resource use status.**

```
# ldm list-devices -a
CORE
    ID      %FREE   CPUSET
    0       0       (0, 1)
    4       0       (8, 9)
    8       0       (16, 17)
------------------------Omitted-----------------------
    184     0       (368, 369)
    188     100     (376, 377)
    512     100     (1024, 1025)
    516     100     (1032, 1033)
    520     100     (1040, 1041)
    524     100     (1048, 1049)
------------------------Omitted-----------------------
VCPU
    PID     %FREE   PM
    0       0       no
    1       0       no
    8       0       no
    9       0       no
------------------------Omitted-----------------------
    369     0       no
```

```
    376     100     ---
    377     100     ---
    1024    100     ---
    1025    100     ---
    1032    100     ---
    1033    100     ---
-----------------------Omitted-----------------------
```

7. **Execute the ldm list-io command to check the use status of the I/O devices.**
   Check the domain to which the I/O device is assigned.

   The following example shows that PCIE0 to PCIE15 in [NAME] are all displayed as "BUS" in [TYPE], indicating the PCIe root complexes. Moreover, [DOMAIN] displays "primary," "iodom0," or "iodom1," indicating assignment to the control domain, iodom0, or iodom1.

```
XSCF>  ldm list-io
NAME                                TYPE   BUS      DOMAIN   STATUS
----                                ----   ---      ------   ------
PCIE0                               BUS    PCIE0    primary  IOV
PCIE1                               BUS    PCIE1    iodom0   IOV
PCIE2                               BUS    PCIE2    primary  IOV
PCIE3                               BUS    PCIE3    primary  IOV
PCIE4                               BUS    PCIE4    primary  IOV
PCIE5                               BUS    PCIE5    iodom0   IOV
PCIE6                               BUS    PCIE6    primary  IOV
PCIE7                               BUS    PCIE7    primary  IOV
PCIE8                               BUS    PCIE8    primary  IOV
PCIE9                               BUS    PCIE9    iodom1   IOV
PCIE10                              BUS    PCIE10   primary  IOV
PCIE11                              BUS    PCIE11   primary  IOV
PCIE12                              BUS    PCIE12   primary  IOV
PCIE13                              BUS    PCIE13   iodom1   IOV
PCIE14                              BUS    PCIE14   primary  IOV
PCIE15                              BUS    PCIE15   primary  IOV
  -----Omitted---------
/BB1/CMUL/NET0                      PCIE   PCIE8    primary  OCC
/BB1/CMUL/SASHBA                    PCIE   PCIE8    primary  OCC
/BB1/PCI0/SLOT1                     PCIE   PCIE9    iodom1   OCC
/BB1/PCI0/SLOT2                     PCIE   PCIE9    sdiodomainOCC
/BB1/PCI0/SLOT3                     PCIE   PCIE9    iodom1   OCC
/BB1/PCI0/SLOT4                     PCIE   PCIE9    sdiodomainOCC
/BB1/PCI0/SLOT5                     PCIE   PCIE9    iodom1   EMP
/BB1/PCI0/SLOT6                     PCIE   PCIE9    iodom1   EMP
/BB1/PCI0/SLOT7                     PCIE   PCIE9    iodom1   EMP
/BB1/PCI0/SLOT8                     PCIE   PCIE9    iodom1   EMP
/BB1/PCI0/SLOT9                     PCIE   PCIE9    iodom1   EMP
/BB1/PCI0/SLOT10                    PCIE   PCIE9    iodom1   EMP
/BB1/PCI0/SLOT11                    PCIE   PCIE9    iodom1   EMP
/BB1/PCI3                           PCIE   PCIE10   primary  EMP
/BB1/PCI4                           PCIE   PCIE10   primary  EMP
/BB1/PCI7                           PCIE   PCIE11   primary  EMP
/BB1/PCI8                           PCIE   PCIE11   primary  EMP
/BB1/CMUL/NET2                      PCIE   PCIE12   primary  OCC
```

```
/BB1/PCI1                          PCIE   PCIE13   iodom1   OCC
/BB1/PCI2                          PCIE   PCIE13   iodom1   EMP
/BB1/PCI5                          PCIE   PCIE14   primary  EMP
/BB1/PCI6                          PCIE   PCIE14   primary  EMP
/BB1/PCI9                          PCIE   PCIE15   primary  EMP
/BB1/PCI10                         PCIE   PCIE15   primary  EMP
  -----Omitted---------
/BB1/CMUL/NET0/IOVNET.PF0          PF     PCIE8    primary
/BB1/CMUL/NET0/IOVNET.PF1          PF     PCIE8    primary
/BB1/PCI0/SLOT1/IOVNET.PF0         PF     PCIE9    iodom1
/BB1/PCI0/SLOT1/IOVNET.PF1         PF     PCIE9    iodom1
/BB1/PCI0/SLOT1/IOVNET.PF2         PF     PCIE9    iodom1
/BB1/PCI0/SLOT1/IOVNET.PF3         PF     PCIE9    iodom1
/BB1/PCI0/SLOT3/IOVNET.PF0         PF     PCIE9    iodom1
/BB1/PCI0/SLOT3/IOVNET.PF1         PF     PCIE9    iodom1
/BB1/CMUL/NET2/IOVNET.PF0          PF     PCIE12   primary
/BB1/CMUL/NET2/IOVNET.PF1          PF     PCIE12   primary
/BB1/PCI0/SLOT3/IOVNET.PF0.VF0     VF     PCIE9    sr-iodomain
/BB1/PCI0/SLOT3/IOVNET.PF0.VF1     VF     PCIE9    sr-iodomain
/BB1/PCI0/SLOT3/IOVNET.PF0.VF2     VF     PCIE9    sr-iodomain
/BB1/PCI0/SLOT3/IOVNET.PF0.VF3     VF     PCIE9    sr-iodomain
/BB1/PCI0/SLOT3/IOVNET.PF0.VF4     VF     PCIE9    sr-iodomain
/BB1/PCI0/SLOT3/IOVNET.PF1.VF0     VF     PCIE9    sr-iodomain
/BB1/PCI0/SLOT3/IOVNET.PF1.VF1     VF     PCIE9    sr-iodomain
/BB1/PCI0/SLOT3/IOVNET.PF1.VF2     VF     PCIE9    sr-iodomain
/BB1/PCI0/SLOT3/IOVNET.PF1.VF3     VF     PCIE9    sr-iodomain
/BB1/PCI0/SLOT3/IOVNET.PF1.VF4     VF     PCIE9    sr-iodomain
```

8. **Execute the ldm list-io command to check whether the SR-IOV function is in use.**
   If there is a line on which "VF" is displayed in [TYPE] of the above output result, the SR-IOV function is in use. The original configuration must be restored after the PCIe card is maintained. So, retain the output result of the ldm list-io command.

Deleting the physical I/O device

1. **If the control domain is made redundant by using the resources of the chassis to be released, cancel the redundancy setting.**
2. **If the I/O device of the chassis requiring maintenance is assigned to the control domain, start the delayed reconfiguration mode with the ldm start-reconf command and then delete the I/O device (root complex) with the ldm remove-io command.**
   After deletion, the control domain must be restarted.

Note - Once the control domain is placed in delayed reconfiguration mode, control corresponding to the guest domain cannot be executed. When the delayed reconfiguration mode has been set, restart the control domain quickly.

---

3. **If there is a guest domain that is virtually using the PCIe card mounted in the**

PCI expansion unit requiring maintenance, make the virtual devices (vnet, vdisk) unused.

a. If the virtual I/O is made redundant in the guest domain, cancel the redundancy setting and make the target virtual device unused.

b. If the virtual I/O is not made redundant in the guest domain, make it unused by, for example, deactivating the virtual network or unmounting the virtual disk.

Perform step 4 and later on the I/O domain to which the I/O device of the chassis to be released is assigned and on the root domain.

4. **If the direct I/O is in use, delete the physical I/O device from the I/O domain, and then restore the physical I/O device to the root domain.**

In case dynamic reconfiguration of PCIe endpoint devices is used

---

Note - Dynamic reconfiguration of PCIe endpoint devices is supported by a combination of XCP 2230 or later and Oracle VM Server for SPARC 3.1.1.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Enable the hotplug service of the root domain and I/O domain.

```
# svcadm enable hotplug
```

b. Execute the ldm remove-io command to delete the physical I/O device from the I/O domain.

```
# ldm remove-io <I/O device name> <I/O domain name>
```

c. Execute the ldm add-io command to reassign the deleted physical I/O device to the root domain.

```
# ldm add-io <I/O device name> <root domain name>
```

In case dynamic reconfiguration of PCIe endpoint devices is not used

Delete the physical I/O device after stopping the I/O domain, and then restore the physical I/O device to the root domain. Execute the following procedure.

a. Execute the ldm stop-domain command to stop the I/O domain.

b. Execute the ldm remove-io command to delete the physical I/O device from the I/O domain.

c. Execute the ldm start-reconf command to make the root domain enter delayed reconfiguration mode.

d. Execute the ldm add-io command to reassign the deleted physical I/O device

to the root domain.

```
# ldm stop-domain <I/O domain name>
# ldm remove-io <I/O domain name> <I/O domain name>
# ldm start-reconf <root domain name>
# ldm add-io <I/O device name> <root domain name>
```

e. Log in to the root domain to restart Oracle Solaris.

```
# telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

5. **If the virtual function (VF) using the SR-IOV function has been created and assigned to the domain, delete and discard it.**

In case Dynamic SR-IOV feature is used

Note - Dynamic reconfiguration of the SR-IOV virtual function is supported by a combination of XCP 2210 or later and Oracle VM Server for SPARC 3.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Enable the hotplug service of the I/O domain and root domain.

```
# svcadm enable hotplug
```

b. Execute the ldm remove-io command to delete the virtual function (VF) assigned to the I/O domain from the I/O domain.
If multiple VFs are assigned from the physical function (PF) of a single PCIe card, delete all the VFs corresponding to that PF from the I/O domain.

```
# ldm remove-io <VF name> <I/O domain name>
```

c. Execute the ldm destroy-vf command to discard the virtual function (VF). However, the VF needs to be discarded in the reverse order to that in which it was created.

```
# ldm destroy-vf <VF name>
```

In case Static SR-IOV feature is used

Execute the following procedure.

a. Execute the ldm stop-domain command to stop the I/O domain.

b. Execute the ldm remove-io command to delete the virtual function (VF)

assigned to the I/O domain from the I/O domain. If multiple VFs are assigned from the physical function (PF) of a single PCIe card, delete all the VFs corresponding to that PF from the I/O domain.

c. Execute the ldm start-reconf command to place the root domain to which PF is assigned in delayed reconfiguration mode.

d. Execute the ldm destroy-vf command to discard the virtual function (VF). However, the VF needs to be discarded in the reverse order to that in which it was created.

```
# ldm stop-domain <I/O domain name>
# ldm remove-io <VF name> <I/O domain name>
# ldm start-reconf <root domain name>
# ldm destroy-vf <VF name>
```

e. Log in to the root domain to restart Oracle Solaris.

```
# telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

6. **Execute the ldm stop-domain command to stop the root domain.**
7. **Execute the ldm remove-io command to delete the physical I/O device (PCIe root complex) from the root domain.**
8. **Execute the ldm list-io command again to check the usage status of the I/O devices.**
9. **If you have enabled the hotplug service, execute the svcadm command to return the hotplug service to the disabled state.**

```
# svcadm disable hotplug
```

Releasing the physical partition that uses the link card

1. **Log in to the XSCF shell.**
2. **If the server requiring maintenance is operating as the master chassis, execute the switchscf command to switch the master XSCF to the standby status.**
   In response to the confirmation message, enter "y."
   If the chassis requiring maintenance is the slave XSCF, go to step 4.

```
XSCF> switchscf -t Standby
The XSCF unit switch between the Master and Standby states.
Continue? [y|n] :y
```

3. **Log in to the XSCF again.**

4. **Execute the showboards command to check the status of the server to which the PCI expansion unit requiring maintenance is connected.**
   The BB-ID of the chassis requiring maintenance is indicated as a system board (PSB) number.

   The following example shows that [Fault] of PSB 01-0 is displayed as "Degraded ," indicating that operation is ongoing but that some parts are faulty.

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ----------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    y    y    y    Passed  Degraded
```

5. **Execute the deleteboard -c disconnect command to release the chassis requiring maintenance from the physical partition.**
   The following example releases PSB 01-0 from the physical partition.

```
XSCF> deleteboard -c disconnect 01-0
```

6. **Execute the showresult command to check the end status of the deleteboard command that was just executed.**
   In the following example, an end status of 0 is returned, indicating normal termination of the deleteboard command.

```
XSCF> showresult
0
```

7. **Execute the showboards command to check that the server requiring maintenance has been released from the physical partition.**
   The following example shows that [Pwr], [Conn], and [Conf] of PSB 01-0 are all displayed as "n," indicating that PSB 01-0 has been released.

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ----------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    n    n    n    Passed  Degraded
```

8. **Execute the ldm list-domain command on the control domain console of the physical partition to confirm that the operation status of the logical domain has not changed after the deletion of the system board.**

5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs

This section describes the procedure for turning off the power to a physical partition to which the PCI expansion unit requiring maintenance belongs.

1. **Log in to the XSCF shell.**
2. **Execute the ioxadm locator command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink so that you can locate the unit.**
   You do not have to perform this step when performing maintenance on the link card mounted on a server.

   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

3. **Execute the ioxadm list command to check the BB-ID of the server that is connected to the PCI expansion unit requiring maintenance.**
   The following example shows that the BB-ID is "BB#01."

```
XSCF> ioxadm list PCIBOX#12B4
PCIBOX                  Link
PCIBOX#12B4             BB#01-PCI#05
```

4. **Execute the showboards -a command to check the PPAR-ID of the physical partition using the link card.**
   The BB-ID of the server to which the PCI expansion unit requiring maintenance is connected is displayed as a system board (PSB) number.

   In the following example, the [PPAR-ID] of PSB 01-0 is "00."

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ----------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    y    y    y    Passed  Normal
```

5. **Execute the showpparstatus -p command to confirm the operating condition of the physical partition.**
   In the following example, the [PPAR Status] of PPAR-ID 00 is displayed as "Running", indicating that the physical partition is operating.

```
XSCF> showpparstatus -p 0
PPAR-ID         PPAR Status
00              Running
```

6. **Execute the showdomainstatus -p command to confirm the operating condition of the logical domain.**
   In the following example, the [Status] of the logical domain with PPAR-ID 00 is displayed as "Solaris running," indicating that Oracle Solaris is operating.

```
XSCF> showdomainstatus -p 0
Logical Domain Name   Status
primary               Solaris running
4S-159-D0-G0          Solaris running
4S-159-D0-G1          Solaris running
4S-159-D0-G2          Solaris running
```

7. **Execute the poweroff -p command to stop all the logical domains on the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   In response to the confirmation message, enter "y".
   In the following example, PPAR-ID 00 is stopped.

```
XSCF> poweroff -p 0
PPAR-IDs to power off:00
Continue? [y|n] :y
00 : Powering off
```

8. **Execute the showpparstatus -p command to confirm that the power to the physical partition is turned off.**
   In the following example, the [PPAR Status] of PPAR-ID 00 is displayed as "Powered Off", indicating that the physical partition is powered off.

```
XSCF> showpparstatus -p 0
PPAR-ID         PPAR Status
00              Powered Off
```

9. **Change the mode switch on the operation panel to Service mode.**
   - When the connection destination is a SPARC M10-1/M10-4
     Change the mode switch to Service mode.
   - When the connection destination is a SPARC M10-4S (without the crossbar box)
     Switch the mode switches of BB-ID#00 and #01 to Service mode.
   - When the connection destination is a SPARC M10-4S (with the crossbar box)
     Change the mode switch of BB-ID#80, #81 to Service mode.

5.3 Stopping the Entire System

This section describes the procedure for stopping the entire system. The operation for stopping the system is performed on the server.
Stop the system in either of the following two ways:

- Stopping the system with the XSCF command
- Stopping the system from the operation panel

1. **Change the mode switch on the operation panel to Service mode.**
   For details, see "2.2 Confirming the Functions of the Operation Panel" in the *Fujitsu M10-1/SPARC M10-1 Service Manual* or the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.

Note - For a building block configuration, switch the mode switches of the master chassis and those chassis whose XSCFs are in the standby state.

---

2. **Display the Oracle Solaris super-user prompt.**

Note - Execute this as a super-user.

---

3. **Stop all guest domains on all physical partitions.**
   For details, see "8.6 Shutting Down a Logical Domain" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.
4. **Stop the control domains on all physical partitions to stop the system.**
   For details, see "5.3.1 Stopping the system with the XSCF command" or "5.3.2 Stopping the system from the operation panel."
5. **Execute the showpparstatus -a command to confirm that the power to the physical partition is turned off.**
   In the following example, the [PPAR Status] of PPAR-ID 00, PPAR-ID 01, and PPAR-ID 02 is displayed as "Powered Off", indicating that all the physical partitions are powered off.

```
XSCF> showpparstatus -a
PPAR-ID         PPAR Status
00              Powered Off
01              Powered Off
02              Powered Off
```

6. **Execute the showdomainstatus -p command to confirm the operating condition of the logical domain.**
   In the following example, the [Status] of the logical domain with PPAR-ID 00 is displayed as "Solaris powering down," indicating that Oracle Solaris has been shut down.

```
XSCF>  showdomainstatus -p 0
Logical Domain Name   Status
primary               Solaris powering down
4S-159-D0-G0          Solaris powering down
4S-159-D0-G1          Solaris powering down
4S-159-D0-G2          Solaris powering down
```

5.3.1 Stopping the system with the XSCF command

Note - Before stopping the system, stop all of the guest domains. For details, see "5.3 Stopping the Entire System."

1. **Log in to the XSCF shell.**
2. **Execute the poweroff -a command.**
   In response to the confirmation message, enter "y".

   In the following example, the status of PPAR-ID 00 and PPAR-ID 01 is displayed as "Powering off", indicating that the physical partition is powered off.

```
XSCF> poweroff -a
PPAR-IDs to power off:00,01
Continue? [y|n] :y
00 : Powering off
01 : Powering off
```

   The following processes are performed.

   - Oracle Solaris is completely shut down.
   - The system stops and enters the POWERON READY status (the XSCF is running).

   For details, see "6.2.2 Stopping the whole system" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.
3. **Check that the POWER LED on the operation panel is off.**

Note - For a building block configuration, check the POWER LEDs on all the chassis constituting the system.

5.3.2 Stopping the system from the operation panel

Note - Before stopping the system, stop all of the guest domains. For details, see "5.3 Stopping the Entire System."

1. **Press the power switch on the operation panel for 4 seconds or more.**
   For details, see "2.2.2 Control function of the operation panel in the *Fujitsu M10-1/SPARC M10-1 Service Manual* or the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.

Note - For a building block configuration, press the power switch on the master chassis. The power switches of the other chassis are disabled.

2. **Check that the POWER LED on the operation panel is off.**

Note - For a building block configuration, check the POWER LEDs on all the chassis constituting the system.

5.4 Accessing Components

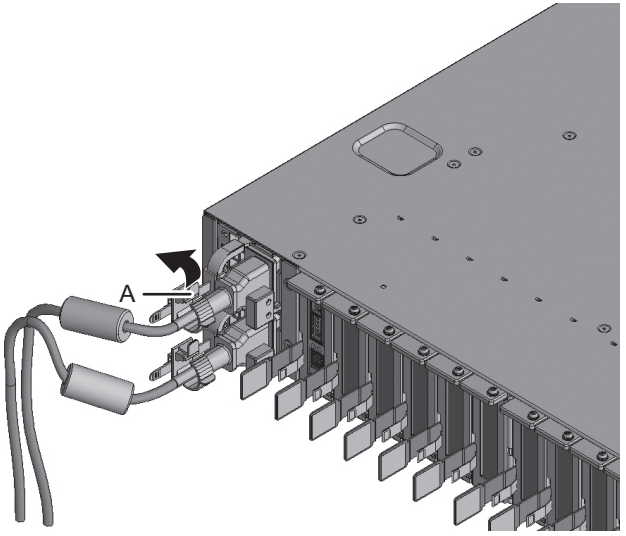
This section explains the operations to be performed before accessing the components requiring maintenance. The operations to be performed vary depending on the components requiring maintenance.

5.4.1 Removing the power cords

Remove the cable clamp from each power cord, and then remove the power cords.

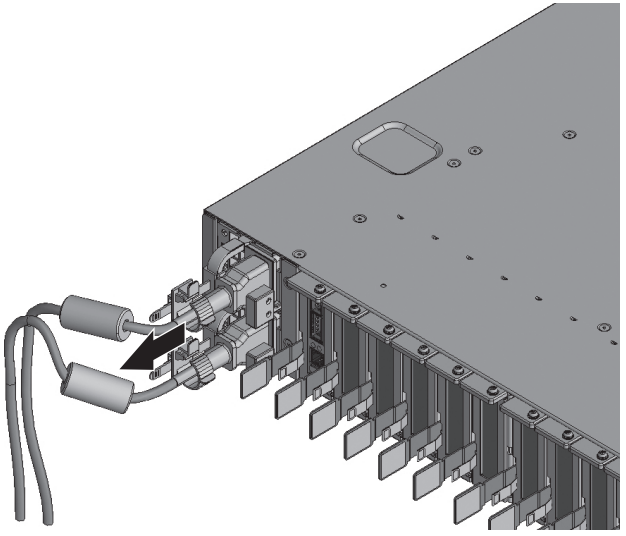
1. **Release the latch (A in the figure) of the cable clamp.**
   Pulling the cable clamp toward the rear of the chassis facilitates the release of the latch.

Figure 5-1 Removing the cable clamp



2. **Remove the power cord from the power supply unit.**

Figure 5-2 Removing the power cords



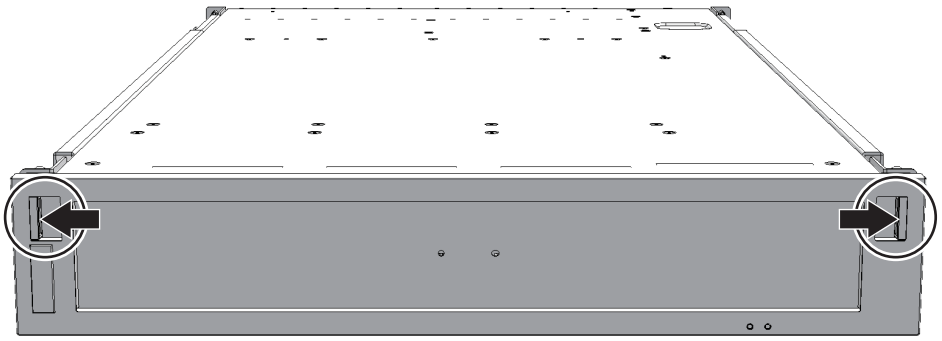
5.4.2 Removing the front cover

To perform maintenance on a component on the front panel or inside the chassis, remove the front cover.

1. **Release the slide locks on both the left and right sides of the front cover, and**

then remove the front cover.

Figure 5-3 Removing the front cover



Chapter 6

Understanding the Preparations for Restoring the System

This chapter describes the procedures for restoring the system after component maintenance. See this chapter, as required, when performing maintenance on each component described in Chapter 7 onwards.

- Mounting the Link Card on the Server
- Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs
- Starting the Entire System
- Restoring the chassis of the PCI expansion unit

6.1 Mounting the Link Card on the Server

This section describes the procedure for mounting a link card on the system.
The link card is mounted on the system using either of the following methods: Using PHP and using physical partition dynamic reconfiguration (DR).

6.1.1 Mounting the link card on the server using PHP

This section describes the procedure for mounting the link card on the server.

Note - If you use the PCI Hot Plug (PHP) to mount the link card on the server, remove all the PCIe cards from the PCI expansion unit. Mount the link card on the server before installing the PCIe cards to the PCI expansion unit. Then, use PHP to incorporate these cards to the server.

1. **Remove all PCI Express card cassettes.**
   For details, see "7.4.2 Removing a PCI Express card cassette."
2. **Execute the svcadm enable hotplug command to enable the hotplug service.**

```
# svcadm enable hotplug
```

3. **Execute the cfgadm(1M) command to mount the link card to which the PCI expansion unit is connected on the logical domain.**
   For the Ap_ID, enter the Ap_ID of the link card you noted down before the start of maintenance.

```
# cfgadm -c configure Ap_ID
```

   The locator LED turns off if the link card is successfully mounted on the logical domain.

Note - No locator LED is provided for the link board, link cables, management cable, power supply unit, PCI tray, or fan backplane.

4. **Install all the PCI Express card cassettes into the PCI expansion unit.**
   For details, see "7.5.2 Installing a PCI Express card cassette."
5. **Execute the cfgadm(1M) command to supply power to the PCIe card.**
   Enter the Ap_ID of the PCIe card that you noted in advance.

```
# cfgadm -c connect Ap_ID
```

6. **Execute the cfgadm(1M) command to incorporate the PCIe card into the logical domain.**
   Enter the Ap_ID of the PCIe card that you noted in advance.

```
# cfgadm -c configure Ap_ID
```

7. **Execute the cfgadm(1M) command to confirm that the PCIe card requiring maintenance has been incorporated into the logical domain.**
   In the following example, the [Receptacle] is displayed as "connected" and the [Occupant] as "configured," indicating that the PCIe card requiring maintenance is incorporated into the logical domain.

```
# cfgadm -a
Ap_Id                Type         Receptacle   Occupant     Condition
BB#0-PCI#0           pci-pci/hp   connected    configured   ok
```

8. **Log in to the XSCF shell.**
9. **Execute the showstatus command to check that the Field Replaceable Unit (FRU) and the link card are operating normally after the completion of maintenance.**
   Nothing is displayed if they are normal.

```
XSCF> showstatus
```

10. **Execute the showhardconf command to check the hardware configuration and the status of each component.**
    In the following example, the [Status] of each component is displayed as "Normal", indicating that the component is operating normally.

```
XSCF> showhardconf
SPARC M10-4S;
    + Serial:2081229003; Operator_Panel_Switch:Service;
    + System_Power:On; System_Phase:Cabinet Power On;
    Partition#0 PPAR_Status:Running;
    BB#00 Status:Normal; Role:Master; Ver:2050h; Serial:2081229003;
        + FRU-Part-Number:CA07361-D202 A0                        ;
        + Power_Supply_System: ;
        + Memory_Size:320 GB;
-----------------------Omitted-----------------------
        PCI#0 Status:Normal; Name_Property:pci;
            + Vendor-ID:108e; Device-ID:9020;
            + Subsystem_Vendor-ID:0000; Subsystem-ID:0000;
            + Model:;
            + Connection:7001;
            PCIBOX#7001; Status:Normal; Ver:1110h; Serial:2121237001;
                + FRU-Part-Number:;
                IOB Status:Normal; Serial:PP123403JE  ;
                   + FRU-Part-Number:CA20365-B66X 008AG                    ;
                LINKBOARD Status:Normal; Serial:PP1234026P  ;
                   + FRU-Part-Number:CA20365-B60X 001AA                    ;
                PCI#1 Name_Property:ethernet;
                    + Vendor-ID:1077; Device-ID:8000;
                    + Subsystem_Vendor-ID:1077; Subsystem-ID:017e;
                    + Model:;
-----------------------Omitted-----------------------
```

11. **Connect to the control domain console of the physical partition.**
12. **Suppose that the virtual function (VF) using the SR-IOV function has been deleted or discarded in "Making the link card ready to be released." Based on the retained output result of the ldm list-io command, re-perform the virtual function creation and assignment to the domain.**

    In case Dynamic SR-IOV feature is used

Note - Dynamic reconfiguration of the SR-IOV virtual function is supported by a combination of XCP 2210 or later and Oracle VM Server for SPARC 3.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Enable the hotplug service of the root domain and I/O domain.

```
# svcadm enable hotplug
```

b. Execute the ldm create-vf command to create the virtual function.

```
# ldm create-vf <PF name>
```

c. Execute the ldm add-io command to assign the virtual function to the I/O domain.

```
# ldm add-io <VF name> <I/O domain name>
```

In case Static SR-IOV feature is used

Execute the following procedure.

a. Place the root domain to which PF is assigned in delayed reconfiguration mode.

```
# ldm start-reconf <root domain name>
```

b. Execute the ldm create-vf command to create the virtual function.

```
# ldm create-vf <PF name>
```

c. Execute the ldm add-io command to assign the virtual function to the I/O domain.

```
# ldm add-io <VF name> <I/O domain name>
```

d. Log in to the root domain, and then restart Oracle Solaris.

```
# telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

13. **Suppose that you have deleted the virtual device and virtual service in "Making the link card ready to be released." Based on the information you have written down, add a virtual device and virtual service and then reassign them to the guest domain.**
    For details on how to add the virtual device and virtual service, see the *Oracle VM Server for SPARC Administration Guide*.
14. **If you have enabled the hotplug service, execute the svcadm command to return the hotplug service to the disabled state.**

```
# svcadm disable hotplug
```

6.1.2 Mounting the link card on the server using physical partition dynamic reconfiguration (DR)

This section describes the procedure for mounting the chassis containing the link card on the physical partition by using physical partition dynamic reconfiguration (DR).

For details on the ldm(1M) command to be executed in each step, see the reference manuals for Oracle VM Server for SPARC 3.1 and later.

Mounting the chassis containing the link card on the physical partition

1. **Log in to the XSCF shell.**
2. **Execute the addboard command with the -c configure option specified to mount the target chassis on the physical partition.**
   In response to the confirmation message, enter "y."

Note - In system board mounting using the addboard command, the target system board is mounted on the physical partition once the hardware diagnosis of the system board is complete. For this reason, it may take some time before execution of the command finishes.

The following example mounts PSB 01-0 on PPAR-ID.

```
XSCF> addboard -c configure -p 0 01-0
PSB#01-0 will be configured into PPAR-ID 0. Continue?[y|n] :y
Start connecting PSB to PPAR. [3600sec]
0..... 30..... 60..... 90.....120.....150.....180.....210.....240.....
270.....300.....330.....360.....390.....420.....450.....480.....510.....
540.....570.....600.....630.....660.....690.....720.....750.....780.....
810.....840.....870.....900.....930.....960.....end
Connected PSB to PPAR.
Start configuring PSB to Logical Domains (LDoms) Manager. [1800sec]
0.....end
Configured PSB to Logical Domains (LDoms) Manager.
Operation has completed.
```

Note - If you omit the -m option or specify bind=resource for the -m option upon execution of the addboard command, resource assignment may not be restored to the status existing before the execution of the deleteboard command.
If the amount of the resources of the system board, such as CPU and memory, before replacement differs from that after replacement, you cannot restore the resource assignment to its original status. Any resources that cannot be restored to their original assignment status will become free. In such cases, use the ldm(1M) command to assign resources to the logical domain again.

---

3. **Execute the showresult command to check the end status of the addboard command that has just been executed.**
   In the following example, 0 is returned as the end status and it is indicated that the addboard command has ended normally.

```
XSCF> showresult
0
```

4. **Execute the showboards command to check that the server requiring maintenance has been mounted on the physical partition.**
   The BB-ID of the server requiring maintenance is indicated as a system board (PSB) number.

   In the following example, [Fault] of PSB 01-0 is displayed as "Normal," indicating that the component is operating normally.

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ---------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    y    y    y    Passed  Normal
```

5. **Execute the showstatus command to confirm that the FRU is operating normally after the completion of maintenance.**
   Nothing is displayed if it is normal.

```
XSCF> showstatus
```

6. **Check that the LED of the link board mounted on the PCI expansion unit requiring maintenance is lit.**
7. **Execute the showhardconf command to check the hardware configuration and the status of each component.**
   Check that an asterisk (*) is not displayed before each component.

```
XSCF> showhardconf
```

8. **Execute the ioxadm list command to confirm that the maintained PCI expansion unit has been recognized normally.**
   The following example shows that PCIBOX#12B4 is connected to BB#01 SLOT#05.

```
XSCF> ioxadm list
PCIBOX                  Link
PCIBOX#12B4             BB#01-PCI#05
```

9. **If the master chassis requiring maintenance has switched to the standby status before maintenance, execute the switchscf command to switch to the master XSCF.**

```
XSCF> switchscf -t Standby
```

Restoring the logical domain to the status it had before maintenance

1. **Connect to the control domain console of the physical partition.**
2. **If you have released the I/O device assigned to the control domain before maintenance, restore the I/O device to its original status.**
   Execute the ldm start-reconf command and then enter delayed reconfiguration mode. Then, assign the I/O device (PCIe root complex) to the control domain with the ldm add-io command. After assignment, the control domain must be restarted.

Note - Once the control domain is placed in the delayed reconfiguration mode, control corresponding to the guest domain cannot be executed. When delayed reconfiguration mode has been set, restart the control domain quickly.

---

3. **Restore the redundancy setting when the I/O device of the system volume of the control domain or the network has been released from redundancy.**
4. **Execute the ldm add-io command to reassign the I/O device (PCIe root complex) released from the root domain to the root domain. Then, start the root domain.**

```
# ldm add-io <I/O device name> <root domain name>
# ldm start-domain <root domain name>
```

5. **If the I/O domain is in use, reassign the PCIe slot to the I/O domain. The PCIe slot is automatically assigned to the root domain. So, to reassign it to the I/O domain, first release it from the root domain and then assign it.**

   In case dynamic reconfiguration of PCIe endpoint devices is used

---

Note - Dynamic reconfiguration of PCIe endpoint devices is supported by a combination of XCP 2230 or later and Oracle VM Server for SPARC 3.1.1.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Enable the hotplug service of the root domain and I/O domain.

```
# svcadm enable hotplug
```

b. Release the physical I/O device (slot).

```
# ldm remove-io <I/O device name> <root domain name>
```

c. Execute the ldm add-io command to assign the PCIe slot to the I/O domain.

```
# ldm add-io <I/O device name> <I/O domain name>
```

In case dynamic reconfiguration of PCIe endpoint devices is not used

Delete the physical I/O device after stopping the I/O domain, and then restore the physical I/O device to the root domain. Execute the following procedure.

a. Place the root domain in the delayed reconfiguration mode to release the physical I/O device (slot).

```
# ldm start-reconf <root domain name>
# ldm remove-io <I/O device name> <root domain name>
```

b. Log in to the root domain to restart Oracle Solaris of the root domain.

```
# telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

c. Execute the ldm add-io command to assign the PCIe slot to the I/O domain.

```
# ldm add-io <I/O device name> <I/O domain name>
```

6. **Suppose that the virtual function (VF) using the SR-IOV function has been deleted or discarded in "Deleting the physical I/O device." Based on the retained output result of the ldm list-io command, re-perform the virtual function creation and assignment to the domain.**

In case Dynamic SR-IOV feature is used

Note - Dynamic reconfiguration of the SR-IOV virtual function is supported by a combination of XCP 2210 or later and Oracle VM Server for SPARC 3.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Enable the hotplug service of the root domain and I/O domain.

```
# svcadm enable hotplug
```

b. Execute the ldm create-vf command to create the virtual function.

```
# ldm create-vf <PF name>
```

In case Static SR-IOV feature is used

Execute the following procedure.

a. Execute the ldm start-reconf command to place the root domain to which the physical function (PF) is assigned in delayed reconfiguration mode.

b. Execute the ldm create-vf command to create the virtual function.

```
# ldm start-reconf <root domain name>
# ldm create-vf <PF name>
```

c. Log in to the root domain to restart Oracle Solaris.

```
# telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

d. Execute the ldm add-io command to assign the virtual function to the I/O domain.

```
# ldm add-io <VF name> <I/O domain name>
```

7. **Execute the ldm start-domain command to start the root domain.**
8. **Execute the ldm start-domain command to start the I/O domain.**
9. **When the virtual device is unused or has been released from redundancy in "Deleting the physical I/O device," restart using the virtual device and set its redundancy again.**
10. **Execute the ldm list-io command to check that the physical I/O device has the same status as it had before maintenance.**
11. **Execute the ldm list-domain command to check that the operation status of the logical domain remains unchanged.**
12. **If you have enabled the hotplug service, execute the svcadm command to return the hotplug service to the disabled state.**

```
# svcadm disable hotplug
```

6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs

This section describes the procedure for turning on the power to a physical partition to which the PCI expansion unit requiring maintenance belongs. How the mode switch is changed depends on the connection destination.

1. **Change the mode switch on the operation panel to Locked mode.**
   - When the connection destination is a SPARC M10-1/M10-4
     Switch the mode switch to Locked mode.
   - When the connection destination is a SPARC M10-4S (without the crossbar box)
     Switch the mode switches of BB-ID#00 and #01 to Locked mode.
   - When the connection destination is a SPARC M10-4S (with the crossbar box)
     Switch the mode switches of BB-ID#80 and #81 to Locked mode.
2. **Log in to the XSCF shell.**
3. **Execute the poweron command to power on the stopped physical partition.**
   In the following example, PPAR-ID 00 is specified.

   Enter the PPAR-ID you previously noted by using the showboards command.

```
XSCF> poweron -p 0
```

4. **Execute the showstatus command to confirm that the FRU is operating normally after the completion of maintenance.**
   Nothing is displayed in the normal state.

```
XSCF> showstatus
```

5. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
SPARC M10-4S;
    + Serial:2081229003; Operator_Panel_Switch:Service;
    + System_Power:On; System_Phase:Cabinet Power On;
    Partition#0 PPAR_Status:Running;
    BB#00 Status:Normal; Role:Master; Ver:2050h; Serial:2081229003;
        + FRU-Part-Number:CA07361-D202 A0                          ;
        + Power_Supply_System: ;
        + Memory_Size:320 GB;
----------------------Omitted-------------------------
        PCI#0 Status:Normal; Name_Property:pci;
```

```
            + Vendor-ID:108e; Device-ID:9020;
            + Subsystem_Vendor-ID:0000; Subsystem-ID:0000;
            + Model:;
            + Connection:7001;
            PCIBOX#7001; Status:Normal; Ver:1110h; Serial:2121237001;
                + FRU-Part-Number:;
                IOB Status:Normal; Serial:PP123403JE  ;
                   + FRU-Part-Number:CA20365-B66X 008AG                    ;
                LINKBOARD Status:Normal; Serial:PP1234026P  ;
                   + FRU-Part-Number:CA20365-B60X 001AA                    ;
                PCI#1 Name_Property:ethernet;
                    + Vendor-ID:1077; Device-ID:8000;
                    + Subsystem_Vendor-ID:1077; Subsystem-ID:017e;
                    + Model:;
------------------------Omitted------------------------
```

6.3 Starting the Entire System

This section explains the procedure for starting the system. The operation for starting the system is performed on the server.
Start the system in either of the following two ways:

- Starting the system with the XSCF command
- Starting the system from the operation panel

1. **Check that the XSCF STANDBY LED on the operation panel is on.**
2. **Switch the mode switch on the operation panel to Locked mode.**
   For details, see "2.2.2 Control function of the operation panel" in the *Fujitsu M10-1/SPARC M10-1 Service Manual* or the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.
3. **Log in to the XSCF shell.**
4. **Start the entire system.**
   For details, see "6.3.1 Starting the system with the XSCF command" or "6.3.2 Starting the system from the operation panel."

   After a short while, the following processes are performed.

   - The POWER LED on the operation panel will be turned on.
   - The power-on self-test (POST; self diagnosis when powering on) will be executed.

   Then, the system starts up. For details, see "6.1 Starting the System" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

Note - When Oracle Solaris is configured to start automatically, use the sendbreak command of the XSCF shell to display the ok prompt. This should be done after the display console banner appears, but before the system starts Oracle Solaris.

5. **Execute the showstatus command to confirm that the FRU is operating normally after the completion of maintenance.**
   Nothing is displayed in the normal state.

```
XSCF> showstatus
```

6. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
SPARC M10-4S;
    + Serial:2081229003; Operator_Panel_Switch:Service;
    + System_Power:On; System_Phase:Cabinet Power On;
    Partition#0 PPAR_Status:Running;
    BB#00 Status:Normal; Role:Master; Ver:2050h; Serial:2081229003;
        + FRU-Part-Number:CA07361-D202 A0                          ;
        + Power_Supply_System: ;
        + Memory_Size:320 GB;
-----------------------Omitted-----------------------
        PCI#0 Status:Normal; Name_Property:pci;
            + Vendor-ID:108e; Device-ID:9020;
            + Subsystem_Vendor-ID:0000; Subsystem-ID:0000;
            + Model:;
            + Connection:7001;
            PCIBOX#7001; Status:Normal; Ver:1110h; Serial:2121237001;
                + FRU-Part-Number:;
                IOB Status:Normal; Serial:PP123403JE  ;
                   + FRU-Part-Number:CA20365-B66X 008AG                    ;
                LINKBOARD Status:Normal; Serial:PP1234026P  ;
                   + FRU-Part-Number:CA20365-B60X 001AA                    ;
                PCI#1 Name_Property:ethernet;
                    + Vendor-ID:1077; Device-ID:8000;
                    + Subsystem_Vendor-ID:1077; Subsystem-ID:017e;
                    + Model:;
-----------------------Omitted-----------------------
```

6.3.1 Starting the system with the XSCF command

1. **Execute the poweron command.**
   For the confirmation message, enter "y".

```
XSCF> poweron -a
PPAR-IDs to power on:00,01
Continue? [y|n] :y
00 : Powering on
01 : Powering on
```

6.3.2 Starting the system from the operation panel

1. **Press the power switch on the operation panel for 1 second or more (less than 4 seconds).**
   For details, see "2.2.2 Control function of the operation panel" in the *Fujitsu M10-1/SPARC M10-1 Service Manual* or the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.

6.4 Restoring the chassis of the PCI expansion unit

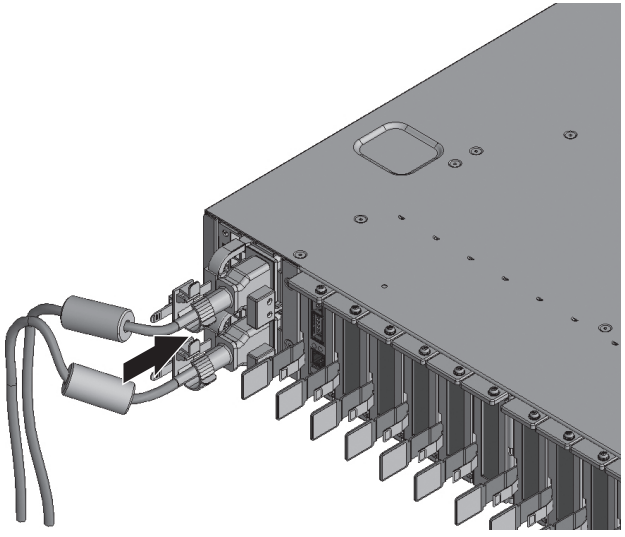
This section describes how to restore the chassis of the PCI expansion unit. The procedure for restoring a chassis depends on the components that have been maintained.

6.4.1 Installing the power cords

If the power cords were removed to perform maintenance, reinstall the power cords in the PCI expansion unit, and then secure them with the cable clamp.

1. **Install the power cords to the the power supply unit of the PCI expansion unit.**

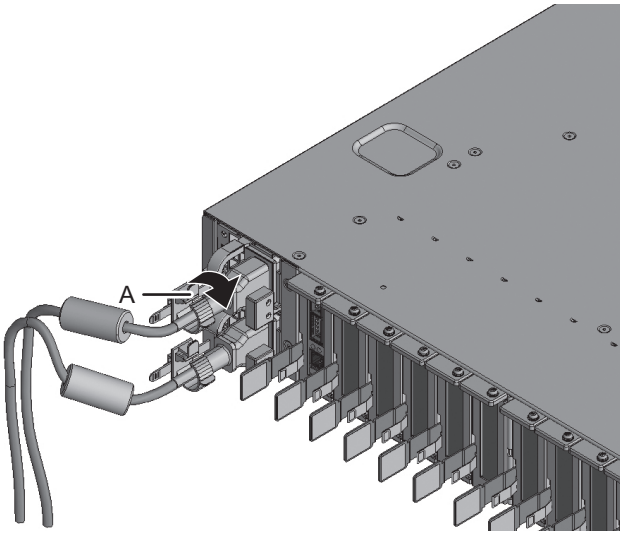
Figure 6-1 Installing the power cords



2. **Clip the power cords with the cable clamp, and secure the cable clamp.**

Lock the latch (A in the figure) and then push the cable clamp toward the front of the chassis to firmly secure the cable clamp.

Figure 6-2 Locking the cable clamp

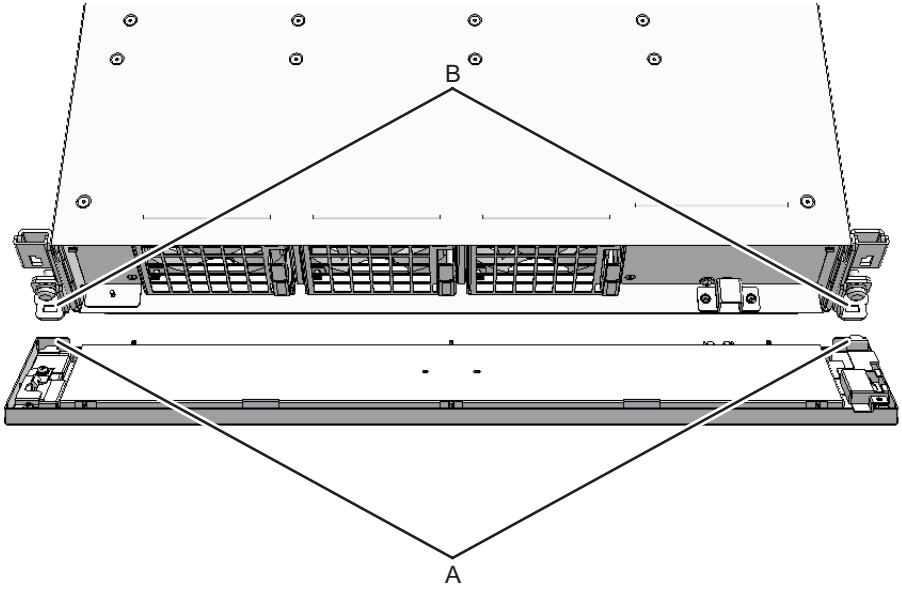


6.4.2 Installing the front cover

If the front cover has been removed for maintenance, mount the components on the front panel or inside the chassis, and then reinstall the front cover.

1. **Insert the tabs of the front cover (A in the figure) into the notches located on the lower side of the front panel of the chassis (B in the figure) to install the front cover.**

Figure 6-3 Installing the front cover



Chapter 7

Maintaining the PCI Express Cards

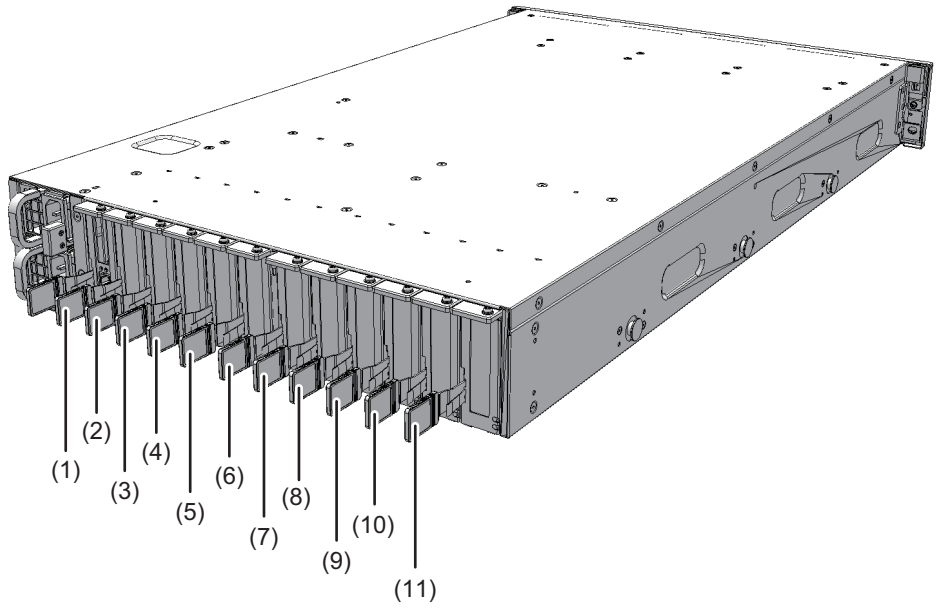
This chapter describes the maintenance procedure for a PCI Express (PCIe) card. PCIe cards can be replaced, installed, or removed.

- Configuration of the PCIe Cards
- Before Maintaining a PCI Express Card
- Enabling the Removal of a PCI Express Card
- Removing a PCI Express Card
- Installing a PCI Express Card
- Restoring the System

7.1 Configuration of the PCIe Cards

This section describes the configuration and location of the PCIe cards.
Up to eleven (11) PCIe cards can be mounted. After maintenance, return the PCIe cards to their original mounting locations.

Figure 7-1 Location of PCIe card



Location number	Component
1	PCIe card (PCIECS#1)
2	PCIe card (PCIECS#2)
3	PCIe card (PCIECS#3)
4	PCIe card (PCIECS#4)
5	PCIe card (PCIECS#5)
6	PCIe card (PCIECS#6)
7	PCIe card (PCIECS#7)
8	PCIe card (PCIECS#8)
9	PCIe card (PCIECS#9)
10	PCIe card (PCIECS#10)
11	PCIe card (PCIECS#11)

7.2 Before Maintaining a PCI Express Card

This section describes the maintenance types, flow, and points to remember regarding a PCIe card.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

7.2.1 Types of maintenance

Table 7-1 lists the types of maintenance for the PCIe cards. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration."

Table 7-1 PCIe card maintenance types supported

-: Not maintainable

Connection destination	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	Enabled (*1)	-	-	-	Enabled	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	Enabled (*1)	Enabled (*2)	-	-	Enabled	Enabled
SPARC M10-4S	Enabled (*1)	Enabled (*2)	Enabled	Enabled	Enabled	Enabled

*1: Maintenance work is performed using PCI hot plug (PHP). While referring to "4.2.2 Checking whether the PCI hot plug (PHP) can be used," check whether PHP is usable. For the relationship between PHP and the direct I/O function, see Table 7-2.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, the link card cannot use PHP.

Table 7-2 Relationship between PHP and direct I/O function

Main unit side Setting of the direct I/O function	PCI expansion unit side Use of direct I/O	PHP available or not
Disabled	Unused	Available
Enabled	Unused	Available
Enabled	Used	Enabled (*1)

*1: Use the dynamic reconfiguration function of the PCIe endpoint device to perform maintenance work. The dynamic reconfiguration function of the PCIe endpoint device is supported by a combination of XCP 2230 or later and Oracle VM Server for SPARC 3.1.1.1 or later.

7.2.2 Maintenance flow

Table 7-3 lists the sequence of the maintenance procedure for PCIe cards. See the relevant section.
The procedure for PCIe card expansion is the same as that for installing a PCIe card.
The procedure for PCIe card removal is the same as that for removing a PCIe card.

Table 7-3 Maintenance flow

Details of update process		Replacement	Expansion	Reduction
1	Preparation	7.3	7.3	7.3
2	Removing the filler unit for a PCIe card or PCIe card	7.4	7.4	7.4
3	Installing the filler unit for a PCIe card or PCIe card	7.5	7.5	7.5
4	Restoring the system	7.6	7.6	7.6

7.2.3 Precautions for installation

Note the following points when performing PCIe card expansion.

- If you are performing PCIe card expansion, remove the filler unit from the PCIe card cassette.
- Keep the removed filler unit because it will be needed if PCIe card reduction is done at a later date.

7.2.4 Precautions for removal

Note the following points when removing PCIe cards.

- If you are performing PCIe card removal, remove the PCIe card from the PCIe card cassette and then install the filler unit of the PCIe card.

7.3 Enabling the Removal of a PCI Express Card

This section describes the preparations that must be completed prior to the removal of a PCIe card. The preparation procedure differs depending on the maintenance type as follows:

- Making the PCIe card ready to be released
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

7.3.1 Active/hot maintenance

Making the PCIe card ready to be released

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the PCIe card requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm locator command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink so that you can locate the unit.**
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Execute the ioxadm list command to check the BB-ID of the server that is connected to the PCI expansion unit requiring maintenance.**
The following example shows that the BB-ID of the server to which PCIBOX#12B4 is connected is "BB#01."

```
XSCF> ioxadm list PCIBOX#12B4
PCIBOX                  Link
PCIBOX#12B4             BB#01-PCI#05
```

6. **Execute the showboards -a command to check the PPAR-ID of the physical partition using the link card.**

The BB-ID of the server to which the PCI expansion unit requiring maintenance is connected is displayed as a system board (PSB) number.

In the following example, the [PPAR-ID] of PSB 01-0 is "00."

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ----------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    y    y    y    Passed  Normal
```

7. **Connect to the control domain console of the physical partition.**
8. **Check whether there is a guest domain that is virtually using the PCIe card requiring maintenance.**

- For the Ethernet card
  a. Execute the ldm list-bindings <domain name> command in the control domain and check the physical network interface name ([NET-DEV] value) assigned to the virtual network switch based on the information for the virtual network switch [VSW].
  The following example specifies "rootdom," which is the name of the logical domain to which the PCIe card is assigned.

```
# ldm list-bindings rootdom
-----------------------Omitted-------------------------
VSW
    NAME         MAC               NET-DEV   ID   DEVICE     LINKPROP
DEFAULT-VLAN-ID PVID ......
    vsw0         xx:xx:xx:xx:xx:xx net4(*1)   0    switch@0             1
        1
        PEER                       MAC               PVID VID
 MTU   MAXBW .....
        vnet0@guest1(*2)          xx:xx:xx:xx:xx:xx 1
1500

-----------------------Omitted-------------------------
```

*1: Physical network interface

*2: Virtual network device and guest domain that are receiving the vsw0 services

b. Log in to the logical domain to which the PCIe card is assigned and check the physical location of the above physical network interface to confirm whether that interface corresponds to the PCIe card requiring maintenance.

- For Oracle Solaris 11, execute the dladm show-phys -L command to determine the [LOC] (physical location) of the physical network interface that corresponds to [NET-DEV] in step a.

```
# dladm show-phys -L
LINK              DEVICE       LOC
net0              igb0         /BB0/CMUL
net1              igb1         /BB0/CMUL
```

```
net2              igb2          /BB0/CMUU
net3              igb3          /BB0/CMUU
net4              ixgbe0        BB#0-PCI#0  <--*
net5              ixgbe1        BB#0-PCI#0
```

- For Oracle Solaris 10, check the physical device path from the /etc/path_to_inst command and compare that path with the physical device path displayed with the idm list-io -l command to check the physical location.

c. Suppose that steps a and b indicate that there is a virtual network switch to which the PCIe card requiring maintenance is assigned. While referring to the [PEER] section of the virtual network switch indicated in step a, check the virtual network device and guest domain that use the service of that virtual network switch.
The display format is "<virtual network device>@<guest domain>."

- For the SAS or FibreChannel card
  a. Execute the ldm list-bindings command in the control domain to check the virtual disk backend ([DEVICE] value) assigned to the virtual disk service among virtual disk service [VDS] information.
  For the types assigned to the virtual disk backend, see "Virtual Disk Back End" in the *Oracle VM Server for SPARC Administration Guide*.
  The following example specifies "rootdom," which is the name of the logical domain to which the PCIe card is assigned.

```
# ldm list-bindings rootdom
------------------------Omitted------------------------
VDS
   NAME           VOLUME         OPTIONS          MPGROUP        DEVICE
   vds0           vol0                                           /export/
vdisks/vdisk.img (*1)
                  vol1                                           /dev/zvol/
dsk/rpool/zvdisk1
                  vol2                                           /dev/dsk/
cxtxxxxxxxxxxxxxxxdxsx
    CLIENT                       VOLUME
    vdisk1@guest1                vol0   (*2)
    vdisk2@guest2                vol1
    vdisk3@guest3                vol2
------------------------Omitted------------------------
```

*1: Virtual disk backend

*2: Names of the virtual disk and guest domain to which the vol0 backend is assigned

b. Log in to the logical domain to which the PCIe card is assigned, identify the physical disk from the backend, and then identify the PCIe card in use.
For details on the step, see the documentation for the software that manages the related file system and volume.

For example, if the backend is a file on the ZFS file system, execute the zfs list command to check the ZFS storage pool corresponding to the mount point of

the directory where the file is placed. Moreover, execute the zpool status <zpool name> command to check the physical device path of the PCIe card to which the LU or hard disk is connected.
If MPxIO is used for management, display the device path of a physical hard disk corresponding to the LU with the mpathadm command to check the physical device path of the PCIe card connected to that path.

c. Suppose that steps a and b indicate that there is a virtual disk service to which the PCIe card requiring maintenance is assigned. While referring to the [CLIENT] section of the virtual disk service indicated in step a, check the virtual disk and guest domain to which the backend of that virtual disk service is assigned.
The display format is "<virtual disk>@<guest domain>."

9. **If there is a guest domain that is virtually using the PCIe card requiring maintenance, delete the virtual devices (vnet, vdisk) and virtual services (vsw, vds).**

a. Log in to the guest domain and stop the use of the virtual device.
If you are using the duplication function of the virtual device, release the target virtual device with the duplication function so that that virtual device is not used.

b. Delete the virtual device and virtual service from the control domain by using the ldm command.
If you need to restore the configuration to the original status after maintaining the PCIe card, make a note of the setting information.

- For the virtual network

```
# ldm remove-vnet <virtual network> <guest domain>
# ldm remove-vswitch <virtual network switch>
```

- For the virtual disk

```
# ldm remove-vdisk <virtual disk> <guest domain>
# ldm remove-vdiskserver <virtual disk service>
```

10. **Suppose that a virtual function (VF) using the the SR-IOV function has been created and assigned to the domain for the PCIe card requiring maintenance. Delete and discard the virtual function from the control domain with the ldm(1M) command.**

In case Dynamic SR-IOV feature is used

Note - Dynamic reconfiguration of the SR-IOV virtual function is supported by a combination of XCP 2210 or later and Oracle VM Server for SPARC 3.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Execute the ldm list-io command to check whether the SR-IOV function is in

use.
For details, see "4.2.3 Checking whether the SR-IOV function is used." If there is a line on which "VF" is displayed in [TYPE] of the output result, the SR-IOV function is in use. The original configuration needs to be restored after the PCIe card is maintained. So, retain the output result of the ldm list-io command.

b. Enable the hotplug service of the root domain and I/O domain.

```
# svcadm enable hotplug
```

c. Execute the ldm remove-io command to delete the virtual function (VF) assigned to the I/O domain from the I/O domain.
If multiple VFs are assigned from the physical function (PF) of a single PCIe card, delete all the VFs corresponding to that PF from the I/O domain.

```
# ldm remove-io <VF name> <I/O domain name>
```

d. Execute the ldm destroy-vf command to discard the virtual function (VF). However, the VF needs to be discarded in the reverse order to that in which it was created.

```
# ldm destroy-vf <VF name>
```

In case Static SR-IOV feature is use

Execute the following procedure.

a. Execute the ldm list-io command to check whether the SR-IOV function is in use.
For details, see "4.2.3 Checking whether the SR-IOV function is used." If there is a line on which "VF" is displayed in [TYPE] of the output result, the SR-IOV function is in use. The original configuration needs to be restored after the PCIe card is maintained. So, retain the output result of the ldm list-io command.

b. Stop the I/O domain.

```
# ldm stop-domain <I/O domain name>
```

c. Execute the ldm remove-io command to delete the virtual function (VF) assigned to the I/O domain from the I/O domain.
If multiple VFs are assigned from the physical function (PF) of a single PCIe card, delete all the VFs corresponding to that PF from the I/O domain.

```
# ldm remove-io <device name> <I/O domain name>
```

d. Place the root domain to which PF is assigned in delayed reconfiguration mode.

```
# ldm start-reconf <root domain name>
```

e. Execute the ldm destroy-vf command to discard the virtual function (VF). However, the VF needs to be discarded in the reverse order to that in which it was created.

```
# ldm destroy-vf <VF name>
```

f. However, the VF needs to be discarded in the reverse order to that in which it was created.

```
# telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

11. **Suppose that the PCIe card requiring maintenance has been assigned to an I/O domain by using the DIO function. Execute the ldm(1M) command from the control domain to delete the physical I/O device from the I/O domain, and then restore the physical I/O device to the root domain.**

In case dynamic reconfiguration of PCIe endpoint devices is used

---

Note - Dynamic reconfiguration of PCIe endpoint devices is supported by a combination of XCP 2230 or later and Oracle VM Server for SPARC 3.1.1.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Enable the hotplug service of the root domain and I/O domain.

```
# svcadm enable hotplug
```

b. Execute the ldm remove-io command to delete the physical I/O device from the I/O domain.

```
# ldm add-io <I/O device name> <root domain name>
```

c. Execute the ldm add-io command to reassign the deleted physical I/O device to the root domain.

```
# ldm remove-io <I/O device name> <I/O domain name>
```

In case dynamic reconfiguration of PCIe endpoint devices is not used

Delete the physical I/O device after stopping the I/O domain, and then restore the physical I/O device to the root domain. Execute the following procedure.

a. Stop the I/O domain.

```
# ldm stop-domain <I/O domain>
```

b. Delete the physical I/O device from the I/O domain.

```
# ldm remove-io <I/O device name> <I/O domain name>
```

c. Place the root domain in delayed reconfiguration mode.

```
# ldm start-reconf <root domain name>
```

d. Execute the ldm add-io command to reassign the deleted physical I/O device to the root domain.

```
# ldm add-io <I/O device name> <root domain name>
```

e. Log in to the root domain to restart Oracle Solaris.

```
# telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

Releasing the PCIe card requiring maintenance using PHP

1. **If the PCIe card requiring maintenance belongs to the root domain, connect to the console of the root domain.**
   If it belongs to the control domain, this step is not necessary since the control domain console is being used.
2. **Display the Oracle Solaris super-user prompt.**

Note - Execute this as a super-user.

---

3. **If the hotplug service is disabled, execute the svcadm enable hotplug command to enable the hotplug service.**

```
# svcadm enable hotplug
```

4. **Execute the cfgadm -a command to check the Ap_ID of the PCIe card and make a note of it.**

```
# cfgadm -a
```

5. **Execute the cfgadm -c command to release the PCIe card from the logical domain.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c unconfigure Ap_ID
```

6. **Execute the cfgadm -c command to stop the power supply to the PCIe card.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c disconnect Ap_ID
```

7. **Execute the cfgadm -x command to cause the ATTENTION LED on the PCIe slot requiring maintenance to blink so that you can locate the unit.**
   For the Ap_ID, check the Ap_ID of the PCIe slot by using the cfgadm -a command, make a note of the Ap_ID, and enter it.

```
# cfgadm -x led=attn,mode=blink Ap_ID
```

8. **Check the following LEDs to determine whether the PCIe card requiring maintenance is actually maintainable.**
   - The ATTENTION LED (amber) of the PCI card slot is blinking.
   - The POWER LED of the PCI card slot is off.
9. **If you have enabled the hotplug service, execute the svcadm command to return the hotplug service to the disabled state.**

```
# svcadm disable hotplug
```

7.3.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the PCIe card requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
   For details, see "5.1 Releasing the Link Card from the Server."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the connection locations of the power cords before disconnecting them to ensure that they are reinstalled properly.

7.3.3 Inactive/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the PCIe card requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."

7.3.4 Inactive/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the PCIe card requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - In the case of a dual power feed, record the positions of the power cords before removing them to ensure that they are reinstalled correctly.

7.3.5 System stopped/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the PCIe card requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."

7.3.6 System stopped/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the PCIe card requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."
6. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - When a dual power feed is installed, record the positions of the power cords before removing them to ensure that they are reinstalled correctly.

7.4 Removing a PCI Express Card

This section describes the procedure for removing a PCIe card. Perform reduction using the same procedure.
For expansion, remove the PCIe card filler unit, rather than a PCIe card itself.
Enable removal of the PCIe card before attempting to remove it. For details, see "7.3 Enabling the Removal of a PCI Express Card."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

7.4.1 Accessing a PCI Express card cassette

1. **Remove all the cables connected to the PCIe cassette requiring maintenance.**

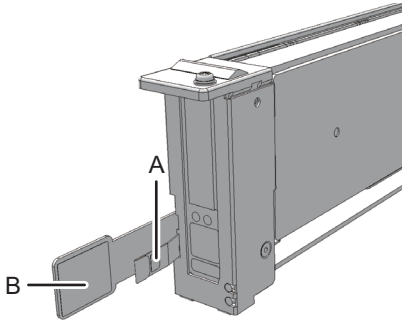
Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.

7.4.2 Removing a PCI Express card cassette

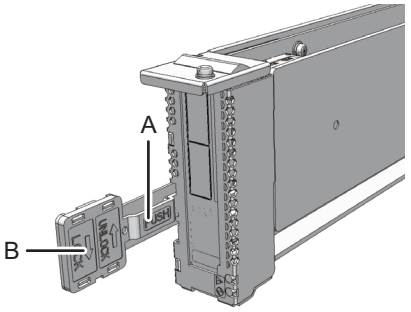
There are two types of PCIe card cassette. These types of PCIe card cassette differ in their latch (A in the figure) and lever (B in the figure), but the procedure is the same. For the types of PCIe card cassettes, see "."
Note that the figures of the explanation show Type-1, unless otherwise specified.

Figure 7-2 Types of PCIe card cassette

Type-1

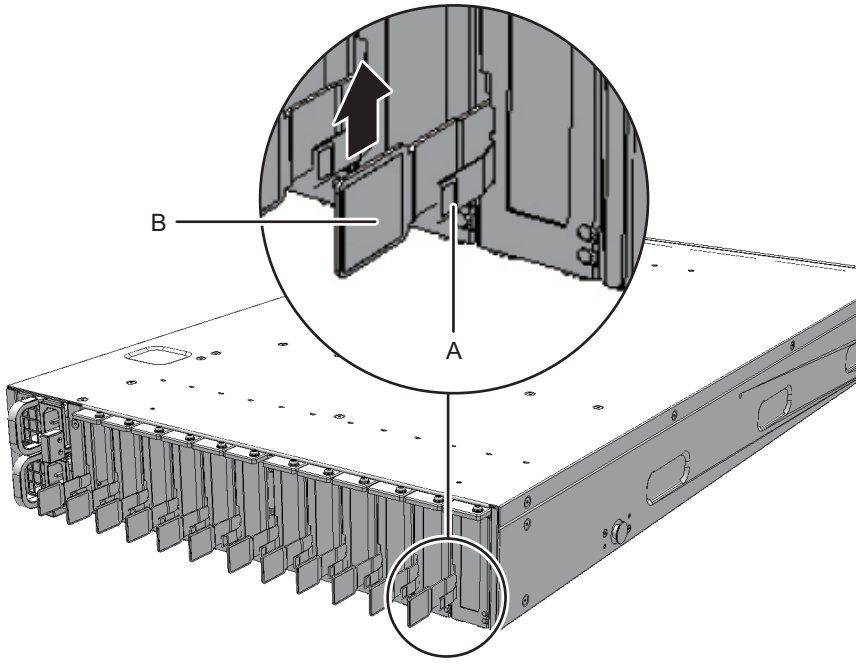


Type-2



1. **Raise the lever (B in the figure) while pressing the latch (A in the figure) of the PCIe card cassette.**

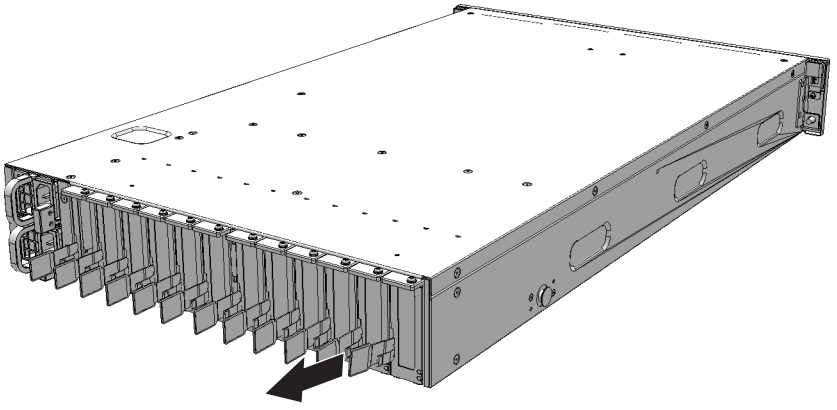
Figure 7-3 Latch and lever of the PCIe card cassette



2. **Hold the lever and carefully pull the PCIe card cassette out of the PCIe slot.**

Note - Place the removed PCIe card cassette on the grounded ESD mat to ground any static electricity.

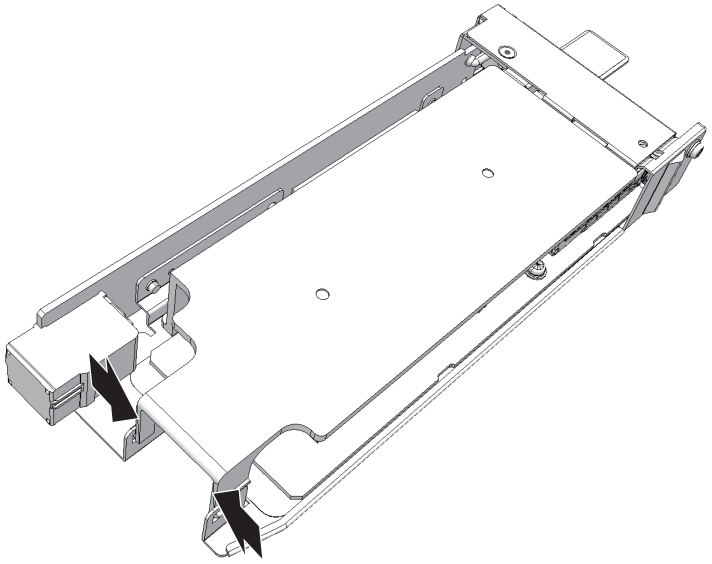
Figure 7-4 Removing the PCIe card cassette



7.4.3 Removing a PCI Express card

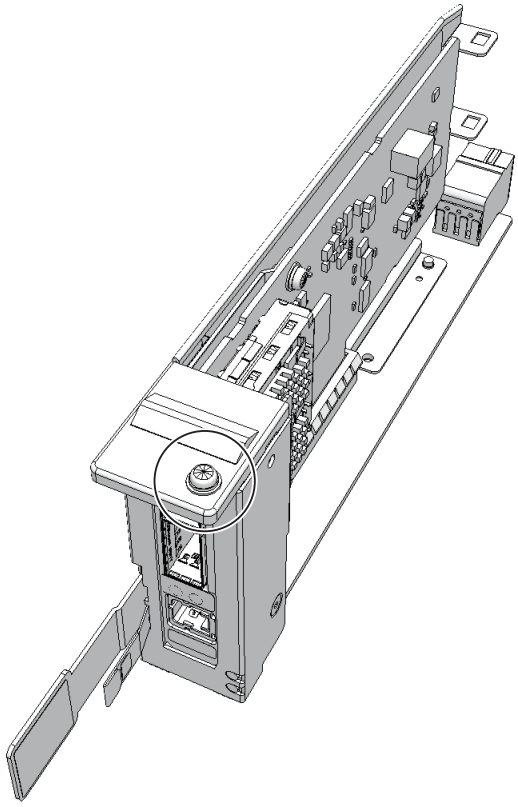
1. **While pressing the cover stop, remove the cover.**

Figure 7-5 Cover stop



2. **Remove the screw securing the PCIe card cassette and remove the bracket of the PCIe card.**

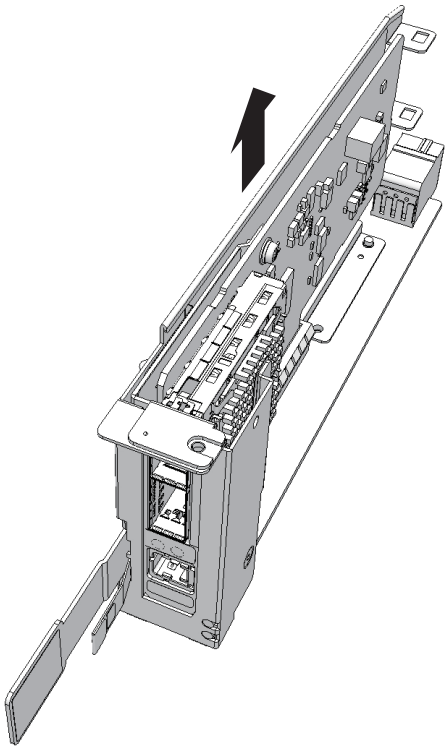
Figure 7-6 Removal of bracket



3. **Remove the PCIe card from the PCIe card cassette.**
   For expansion, you do not have to perform this step. Remove the filler unit for the PCIe card from the PCIe card cassette.

Note - Do not forcibly remove the PCIe card from the PCIe card cassette. If excessive force is used to remove the PCIe card, it may be damaged.
Note - Place the removed PCIe card on a grounded antistatic ESD mat.

Figure 7-7 PCIe card removal



7.5 Installing a PCI Express Card

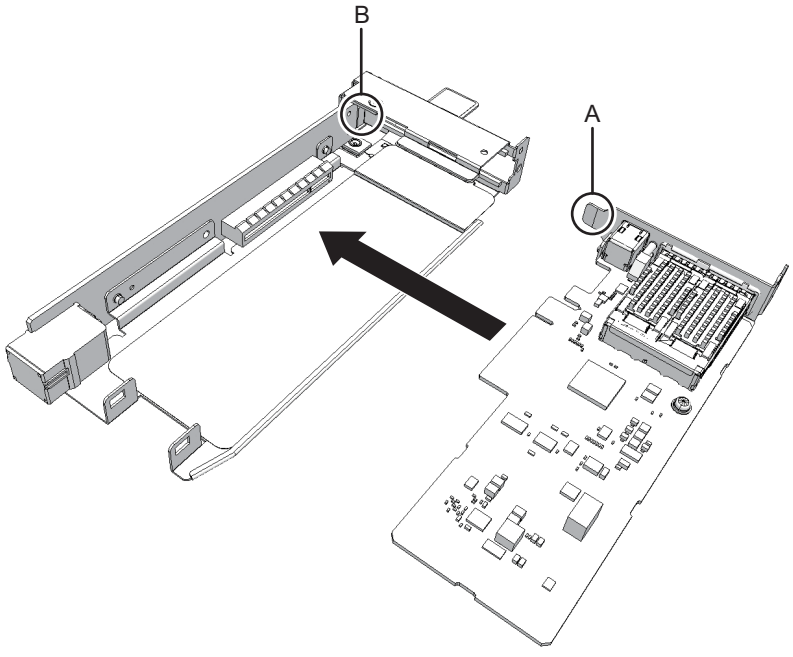
This section describes the procedure for installing a PCIe card. Perform expansion using the same procedure. For removal, install a filler unit for a PCIe card rather than a PCIe card itself.

7.5.1 Installing a PCI Express card

1. **Install the PCIe card by inserting it into the connector of the PCIe card cassette.**
   For removal, you do not have to perform this step. Mount the filler for a PCIe card in the PCIe card cassette.

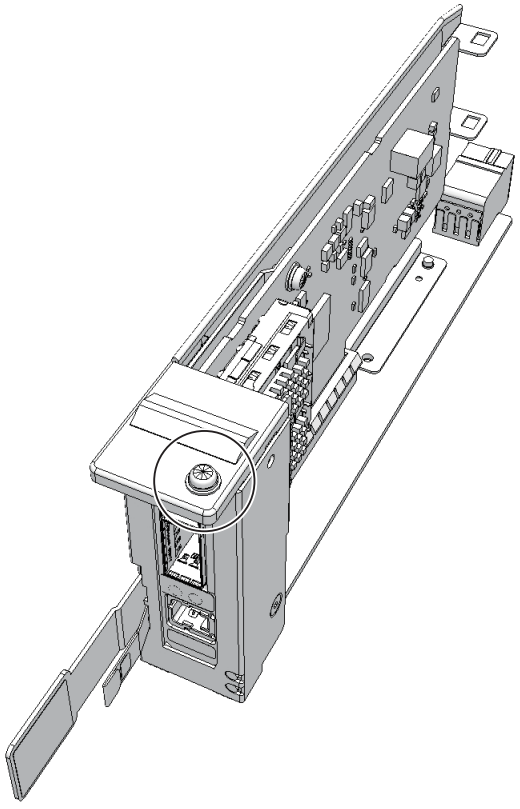
Note - Confirm that the tab of the PCIe card (A in the figure) or the tab of the filler for the PCIe card is inserted into the notch (B in the figure) of the PCIe card cassette.

Figure 7-8 Installing a PCIe card



2. **Install the bracket for the PCIe card, and then secure it with the screw.**

Figure 7-9 Installing the bracket



3. **Mount the cover on the PCIe card cassette.**

7.5.2 Installing a PCI Express card cassette

Caution - When installing a PCIe card cassette, confirm that the connectors on both the chassis and PCIe card cassette do not have any bent pins, and that the pins are aligned correctly. If you attempt to install a PCIe card cassette while any of the connector pins are bent, the chassis or the PCIe card cassette may be damaged. When performing installation, perform the work carefully so as not to bend any pins.

1. **Hold the lever of the PCIe card cassette and carefully insert the cassette into the PC slot.**

Note - Slide the PCIe card cassette along the rail at the bottom of the PCIe slot.
Note - Do not forcibly push the PCIe card cassette into the PCI slot. Using excessive force may damage the component or the chassis.

2. **Lower the lever while pressing the latch of the PCIe card cassette to secure it.**

Note - Confirm that the PCIe card cassette is securely and correctly inserted.

7.5.3 Restoring the chassis

1. **Connect all the cables to the PCIe card cassette.**

Note - Connect the cables in their original positions by referring to the record that you made before the start of maintenance.

7.6 Restoring the System

This section describes the procedure for restoring the system after a PCIe card is installed or removed. The restoration procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

7.6.1 Active/hot maintenance

1. **Execute the cfgadm(1M) command to supply power to the PCIe card requiring maintenance.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c connect Ap_ID
```

2. **Execute the cfgadm(1M) command to incorporate the PCIe card requiring maintenance into the logical domain.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c configure Ap_ID
```

3. **Execute the cfgadm(1M) command to confirm that the PCIe card requiring maintenance has been incorporated into the logical domain.**
   In the following example, the [Receptacle] is displayed as "connected" and the [Occupant] as "configured," indicating that the PCIe card requiring maintenance is incorporated into the logical domain.

```
# cfgadm -a
Ap_Id                  Type         Receptacle   Occupant     Condition
BB#0-PCI#0             pci-pci/hp   connected    configured   ok
```

4. **If necessary, execute the svcadm disable command to disable the hotplug service.**

```
# svcadm disable hotplug
```

5. **Log in to the XSCF shell.**
6. **Execute the showstatus command to check that the replaced PCIe card is operating normally.**
   Nothing is displayed if it is normal.

```
XSCF> showstatus
```

7. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

8. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

9. **Connect to the control domain console of the physical partition.**
10. **Suppose that the assignment to the I/O domain by use of the direct I/O function has been deleted in "Making the PCIe card ready to be released." Based on the retained output result of the ldm list-io command, perform the reassignment to the I/O domain.**

In case dynamic reconfiguration of PCIe endpoint devices is used

Note - Dynamic reconfiguration of PCIe endpoint devices is supported by a combination of XCP 2230 or later and Oracle VM Server for SPARC 3.1.1.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Enable the hotplug service of the I/O domain and root domain.

```
# svcadm enable hotplug
```

b. Execute the ldm remove-io command to delete the physical I/O device from the root domain.

```
# ldm remove-io <I/O device name> <root domain name>
```

c. Execute the ldm add-io command to reassign the deleted physical I/O device to the I/O domain.

```
# ldm add-io <I/O device name> <I/O domain name>
```

In case dynamic reconfiguration of PCIe endpoint devices is not used

Delete the physical I/O device after stopping the I/O domain, and then restore the physical I/O device to the root domain. Execute the following procedure.

a. Place the root domain in delayed reconfiguration mode.

```
# ldm start-reconf <root domain name>
```

b. Delete the physical I/O device from the root domain.

```
# ldm remove-io <I/O device name> <root domain name>
```

c. Log in to the root domain to restart Oracle Solaris.

```
# telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

d. Execute the ldm add-io command to reassign the deleted physical I/O device to the I/O domain.

```
# ldm add-io <I/O device name> <I/O domain name>
```

11. **Start the stopped I/O domain before replacing the PCIe card.**

```
# ldm start-domain <I/O domain name>
```

12. **Suppose that the virtual function (VF) using the SR-IOV function has been**

deleted or discarded in "Making the PCIe card ready to be released." Based on the retained output result of the ldm list-io command, re-perform the virtual function creation and assignment to the domain.

In case Dynamic SR-IOV feature is used

Note - Dynamic reconfiguration of the SR-IOV virtual function is supported by a combination of XCP 2210 or later and Oracle VM Server for SPARC 3.1 or later.

Stopping the I/O domain or root domain is unnecessary. Execute the following procedure.

a. Enable the hotplug service of the root domain and I/O domain.

```
# svcadm enable hotplug
```

b. Execute the ldm create-vf command to create the virtual function.

```
# ldm create-vf <PF name>
```

c. Execute the ldm add-io command to assign the virtual function to the I/O domain.

```
# ldm add-io <VF name> <I/O domain name>
```

In case Static SR-IOV feature is used

Execute the following procedure.

a. Place the root domain to which PF is assigned in delayed reconfiguration mode.

```
# ldm start-reconf <root domain name>
```

b. Execute the ldm create-vf command to create the virtual function.

```
# ldm create-vf <PF name>
```

c. Execute the ldm add-io command to assign the virtual function to the I/O domain.

```
# ldm add-io <VF name> <I/O domain name>
```

d. Log in to the root domain, and then restart Oracle Solaris.

```
# telnet localhost <port number>
...
# shutdown -i6 -g0 -y
```

13. **Start the stopped I/O domain before replacing the PCIe card.**

```
# ldm start-domain <I/O domain name>
```

14. **Suppose that you have deleted the virtual device and virtual service in "Making the PCIe card ready to be released." Based on the information you have written down, add a virtual device and virtual service and then reassign them to the guest domain.**
    For details on how to add the virtual device and virtual service, see the *Oracle VM Server for SPARC Administration Guide*.
15. **If you have enabled the hotplug service, execute the svcadm command to return the hotplug service to the disabled state.**

```
# svcadm disable hotplug
```

16. **Close the rack door.**

7.6.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

---

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Mount the PCI expansion unit on the server.**
   For details, see "6.1 Mounting the Link Card on the Server."
4. **Close the rack door.**

7.6.3 Inactive/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

3. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."

4. **Close the rack door.**

7.6.4 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Close the rack door.**

7.6.5 System stopped/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

3. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
4. **Close the rack door.**

7.6.6 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring**

maintenance has been recognized normally.
When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Start the entire system.**
For details, see "6.3 Starting the Entire System."

5. **Close the rack door.**

Chapter 8

Maintaining the Link Board

This chapter describes the maintenance procedure for the link board.

- Configuration of the Link Board
- Before Maintaining the Link Board
- Enabling the Removal of the Link Board
- Removing the Link Board
- Installing the Link Board
- Restoring the System

8.1 Configuration of the Link Board

This section describes the configuration and location of the link board.
The link board is mounted in a dedicated slot among the PCI Express (PCIe) slots. Connect the link board to the link card mounted on the SPARC M10-1/M10-4/M10-4S with the link cables and the management cable.

Figure 8-1 Location of the link board

Location number	Component
1	Link board (LINKBD)

8.2 Before Maintaining the Link Board

This section describes the maintenance types and flow for the link board.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

8.2.1 Types of maintenance

Table 8-1 lists the types of maintenance for the link board. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration."

Table 8-1 Link board maintenance types supported

-: Not maintainable

Connection destination	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	-	-	-	-	Enabled	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	Enabled (*1)	Enabled (*1)	-	-	Enabled	Enabled
SPARC M10-4S	Enabled (*1)	Enabled (*2)	Enabled	Enabled	Enabled	Enabled

*1: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, the link card cannot use PHP. Using physical partition dynamic reconfiguration (DR), release the link card from the system.

8.2.2 Maintenance flow

Table 8-2 lists the sequence of the maintenance procedure for the link board. See the relevant section.

Table 8-2 Maintenance flow

Details of update process		Replacement
1	Preparation	8.3
2	Link board removal	8.4
3	Link board installation	8.5
4	Restoring the system	8.6

8.3 Enabling the Removal of the Link Board

This section describes the preparations that must be completed prior to the removal of the link board. The preparation procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

8.3.1 Active/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link board requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Release, from the server, the link card to which the PCI expansion unit**

requiring maintenance is connected.
For details, see "5.1.1 Releasing the link card using PHP."

8.3.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link board requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
For details, see "5.1 Releasing the Link Card from the Server."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

8.3.3 Inactive/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link board requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."

8.3.4 Inactive/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link board requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

8.3.5 System stopped/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link board requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."

8.3.6 System stopped/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link board requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."
6. **Check whether the PCI expansion unit requiring maintenance is actually maintainable from the LED status on that unit.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - When a dual power feed is installed, record the positions of the power cords before removing them to ensure that they are reinstalled correctly.

8.4 Removing the Link Board

This section describes the preparations that must be completed prior to removing the link board.
Enable removal of the link board before attempting to remove it. For details, see "8.3 Enabling the Removal of the Link Board."

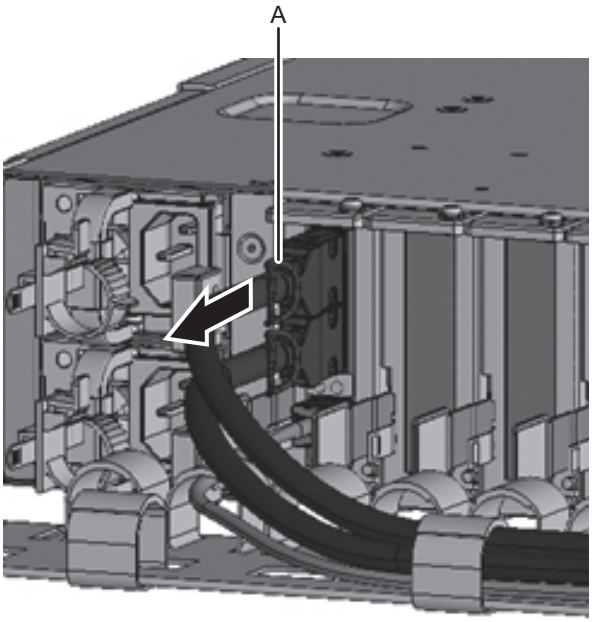
Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

8.4.1 Accessing the link board

1. **Remove the two link cables and one management cable connected to the link board requiring maintenance.**

Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.
Note - Remove the link cable (electrical) or link cable (optical) by holding the tab (A in the figure) of the cable and pulling it straight toward the cable itself. At this time, do not hold the cable part when pulling out the crossbar cable. Pulling the cable part without the connector lock completely released may cause damage.

Figure 8-2 Removing the link cable

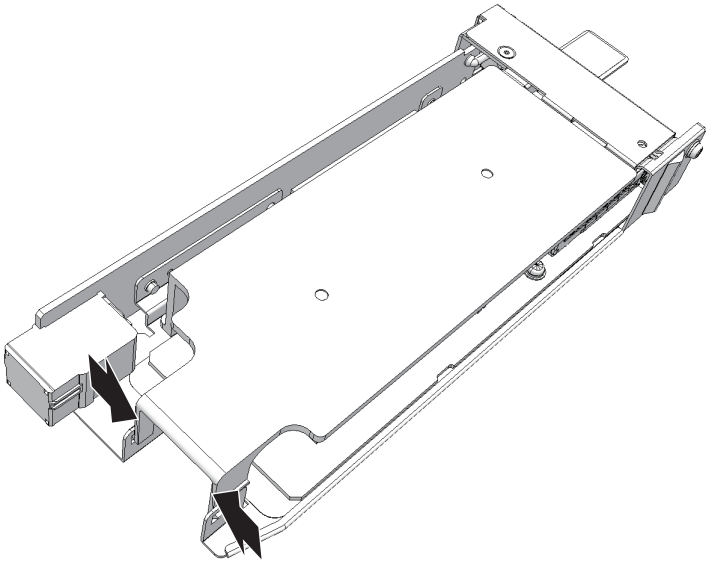


2. **Remove the PCIe card cassette.**
   For details, see "7.4.2 Removing a PCI Express card cassette."

8.4.2 Removing the link board

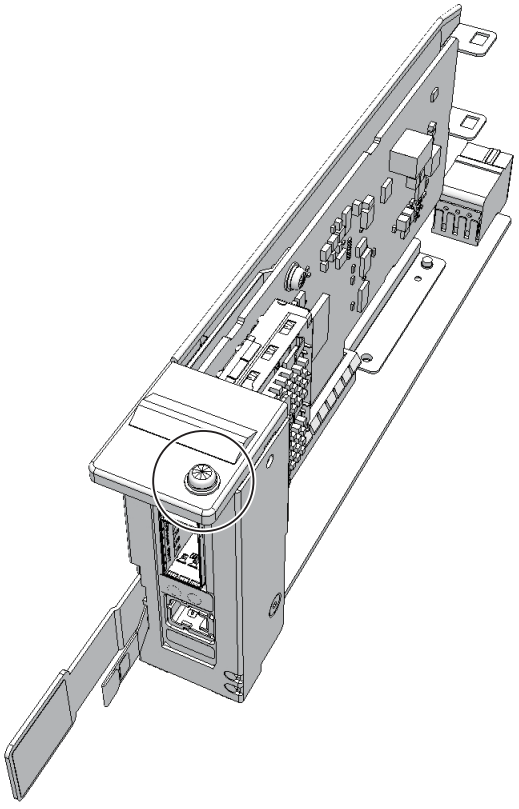
1. **While holding down the cover stopper, lift the cover away.**

Figure 8-3 Cover stop



2. **Remove the screw securing the PCIe card cassette, and then remove the bracket of the link board.**

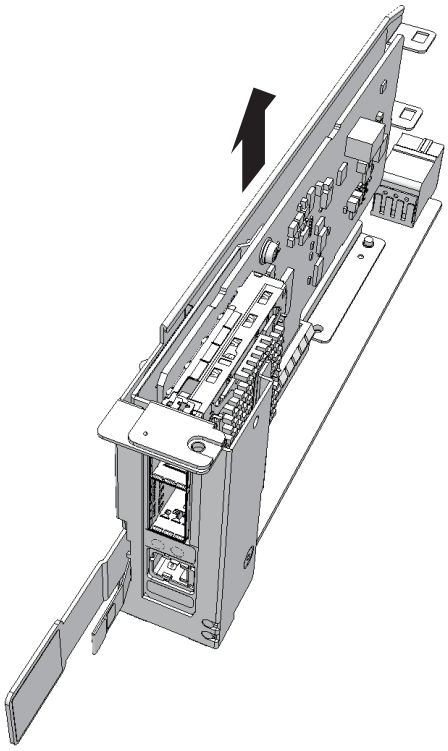
Figure 8-4 Removing the bracket



3. **Remove the link board from the PCIe card cassette.**

Note - Do not use excessive force to remove the link board from the PCIe card cassette. The use of excessive force could damage the link board.
Note - Place the removed link board on the ESD mat to ground any static electricity.

Figure 8-5 Link board removal



8.5 Installing the Link Board

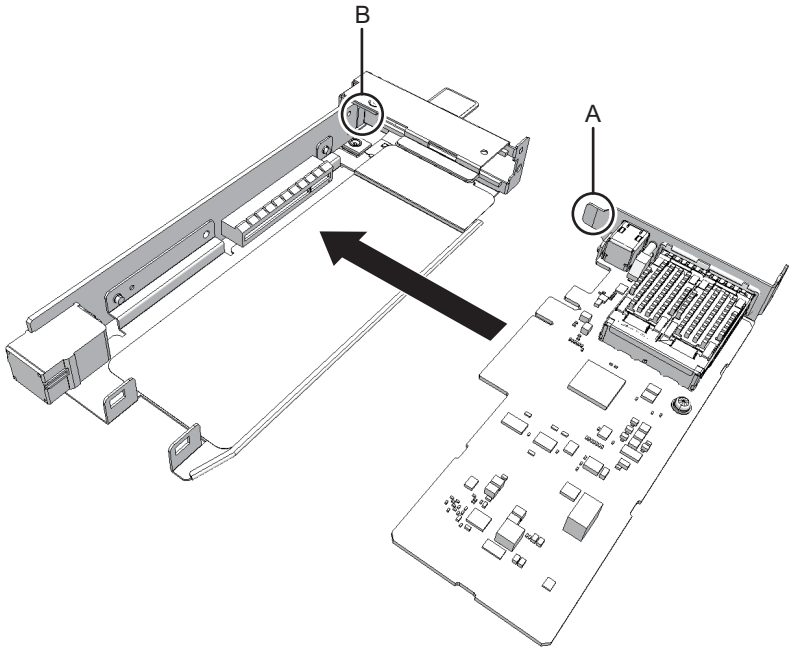
This section describes the procedure for installing the link board.

8.5.1 Installing the link board

1. **Install the link board by inserting it into the connector of the PCIe card cassette.**

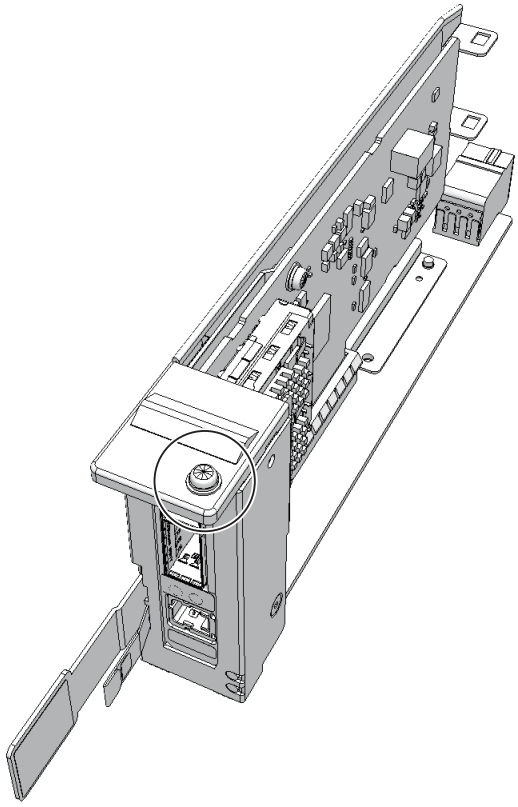
Note - Confirm that the tab of the link board (A in the figure) is inserted into the notch (B in the figure) of the PCIe card cassette.

Figure 8-6 Link board installation



2. **Secure the bracket of the link board with the screw.**

Figure 8-7 Installing the bracket



3. **Mount the cover on the PCIe card cassette.**

8.5.2 Restoring the chassis

1. **Install the PCIe card cassette.**
   For details, see "7.5.2 Installing a PCI Express card cassette."
2. **Connect the two link cables and one management cable.**

Note - Connect the cables in their original positions by referring to the notes that you made before the start of maintenance.
Note - Insert the link cable (electrical) or link cable (optical) by holding the connector part of the cable and inserting it straight into the opening. Do not hold the cable part when inserting the cable.

8.6 Restoring the System

This section describes the procedure for restoring the system after link board installation. The restoration procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/Cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

8.6.1 Active/hot maintenance

1. **Mount the PCI expansion unit on the server.**
   For details, see "6.1.1 Mounting the link card on the server using PHP."
2. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

3. **Close the rack door.**

8.6.2 Active/Cold maintenance

Note - Active/cold maintenance is performed using either of two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**

3. **Mount the PCI expansion unit on the server.**
   For details, see "6.1 Mounting the Link Card on the Server."
4. **Close the rack door.**

8.6.3 Inactive/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
3. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
4. **Close the rack door.**

8.6.4 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Close the rack door.**

8.6.5 System stopped/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

3. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
4. **Close the rack door.**

8.6.6 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
5. **Close the rack door.**

Chapter 9

Maintaining the Link Cards

This chapter describes the maintenance procedure for the link card. Link cards can be replaced, expanded, and removed.

- Configuration of a Link Card
- Before Maintaining a Link Card
- Enabling the Removal of the Link Card
- Removing the Link Card
- Installing the Link Card
- Restoring the System

9.1 Configuration of a Link Card

This section describes the configuration and location of the link cards.
Mount a link card in the PCI Express (PCIe) slot of the SPARC M10-1 or SPARC M10-4/M10-4S and then, for each link card, connect one PCI expansion unit to add a PCIe slot. In the case of the SPARC M10-1, up to three link cards can be mounted; up to 11 for the SPARC M10-4, and up to eight for the SPARC M10-4S.

Figure 9-1 Link card mounting position (SPARC M10-1)

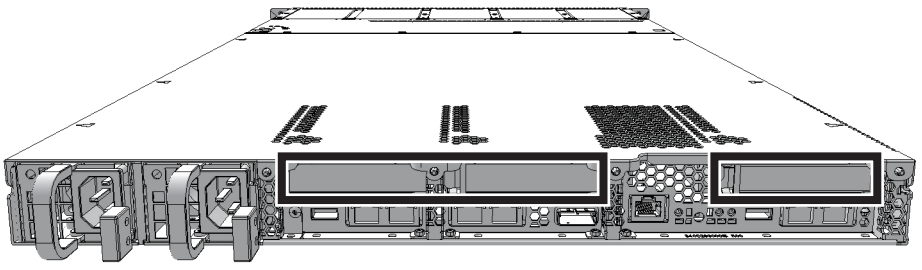
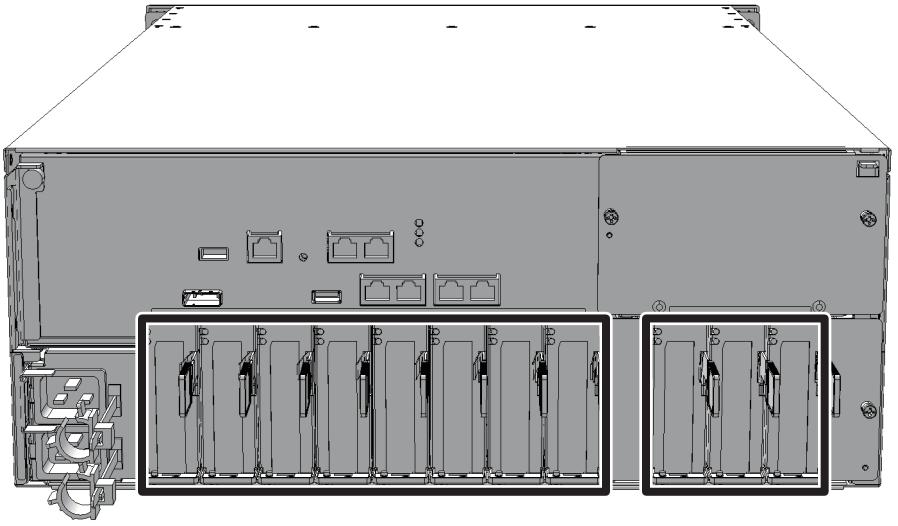
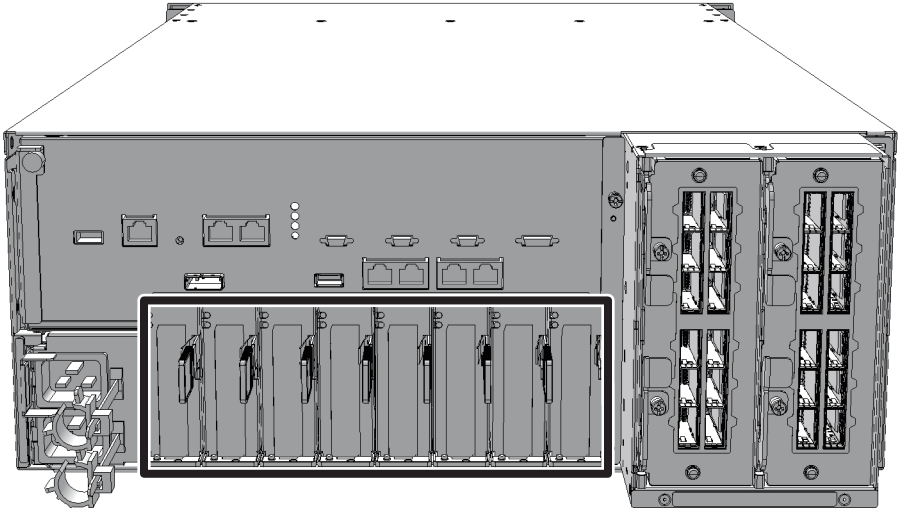


Figure 9-2 Link card mounting position (SPARC M10-4/M10-4S)

SPARC M10-4



SPARC M10-4S



9.2 Before Maintaining a Link Card

This section describes the maintenance types, flow, and points to remember regarding the link card.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

9.2.1 Types of maintenance

Table 9-1 lists the types of maintenance for the link card. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration." The link card maintenance type refers to the status of the server side.

Table 9-1 Types of maintenance for the link card

-: Not maintainable

Mounting location	Active/hot (PHP)	Active/hot (DR)	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	-	-	-	-	Enabled	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	Enabled (*1)	-	-	-	Enabled	Enabled
SPARC M10-4S	Enabled (*2)	Enabled (*3)	Enabled	Enabled	Enabled	Enabled

*1: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, the link card cannot use PHP. Using physical partition dynamic reconfiguration (DR), release the link card from the system.

*3: Using physical partition dynamic reconfiguration (DR), it is necessary to release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.

9.2.2 Maintenance precautions

Note the following when performing link card maintenance.

- Active/hot maintenance and inactive/hot maintenance of the link card can only be performed when the server is hot.
- No active addition can be performed for the link card with PCI hot plug (PHP). In the building block configuration, use physical partition dynamic reconfiguration

or perform inactive addition. For the SPARC M10-1, SPARC M10-4, or a configuration of 1 M10-4S, perform addition with the system stopped.

- Before replacing the link card, check the firmware version. The firmware of the PCI expansion unit has been installed on the link card and the I/O board. When replacing the link card, however, the firmware version cannot be automatically matched to the one before the replacement. For this reason, you must use a confirmed firmware version to match it to the firmware version before the replacement. If you cannot recognize the PCI expansion unit from the XSCF, check the firmware version of a part that has not been replaced after the replacement to match it to the firmware version before the replacement.
- When you replace the I/O board and the link card at the same time, check the firmware version before the replacement. If you replace the I/O board and the link card at the same time without checking the firmware version, you may not be able to match the version.
- If multiple PCI expansion units are used and the firmware versions match within the combinations, there will be no problem with the operation even if firmware versions differ among PCI expansion units.

9.3 Enabling the Removal of the Link Card

This section describes the preparations that must be completed prior to the removal of the link card. The preparation procedure differs depending on the maintenance type as follows:

- Active/hot maintenance (use of PHP)
- Active/hot maintenance (use of DR)
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

9.3.1 Active/hot maintenance (use of PHP)

Note - Active/hot maintenance using PHP can be performed only when the destination is the SPARC M10-4 or SPARC M10-4S.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link card requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Check the serial number and the firmware version of the PCI expansion unit.**
For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **Release the link card requiring maintenance from the server.**
For details, see "5.1.1 Releasing the link card using PHP."
6. **Execute the cfgadm(1M) command to cause the locator LED of the link card to blink so that you can locate the card.**
Enter the Ap_ID of the link card that you noted in advance.

```
# cfgadm -x led=attn, mode=blink Ap_ID
```

7. **Check the following LEDs to determine whether the PCIe card requiring maintenance is actually maintainable.**
   - The ATTENTION LED (amber) of the PCI card slot is blinking.
   - The POWER LED of the PCI card slot is off.

9.3.2 Active/hot maintenance (use of DR)

Note - For active/hot maintenance that does not use PHP, it is necessary to release the server requiring maintenance from the physical partition using physical partition dynamic reconfiguration (DR). For details on the the versions of XCP and Oracle VM Server for SPARC/SRU that support DR, see the latest product note.
Note - Active/cold maintenance is enabled only for the building block configuration of the SPARC M10-4S.

---

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link card requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Check the serial number and the firmware version of the PCI expansion unit.**

For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."

5. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
   For details, see "5.1.2 Releasing the link card using physical partition dynamic reconfiguration (DR)."

9.3.3 Inactive/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link card requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.4 Checking log information."

4. **Check the serial number and the firmware version of the PCI expansion unit.**
   For details, see "For maintenance with the system stopped" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."

9.3.4 Inactive/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link card requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.4 Checking log information."

4. **Check the serial number and the firmware version of the PCI expansion unit.**
   For details, see "For maintenance with the system stopped" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."

6. **Check the following LEDs to determine whether the link card requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit or the PSU backplane unit of the server containing the link card requiring maintenance.**
   For details, see "5.3.1 Removing the power cords" in the *Fujitsu M10-1/SPARC M10-1 Service Manual*, or "5.9.4 Removing the power cord" in the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

9.3.5 System stopped/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link card requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.4 Checking log information."
4. **Check the serial number and the firmware version of the PCI expansion unit.**
   For details, see "For maintenance with the system stopped" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance and thus allow you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

6. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."

9.3.6 System stopped/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link card requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Check the serial number and the firmware version of the PCI expansion unit.**
   For details, see "For maintenance with the system stopped" in "How to check the serial number and firmware version of the PCI expansion unit."

5. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance and thus allow you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

6. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."

7. **Check the following LEDs to determine whether the link card requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.

8. **Remove all the power cords from the power supply unit or the PSU backplane unit of the server containing the link card requiring maintenance.**
   For details, see "5.3.1 Removing the power cords" in the *Fujitsu M10-1/SPARC M10-1 Service Manual*, or "5.9.4 Removing the power cord" in the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

9.4 Removing the Link Card

This section describes the preparations that must be completed prior to removing the link card.

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

The procedure for removing a link card is the same as that for removing a PCIe card mounted on the SPARC M10-1 or SPARC M10-4/M10-4S.
For details on the SPARC M10-1, see "12.4 Removing a PCI Express Card" in the *Fujitsu M10-1/SPARC M10-1 Service Manual*.

For details on the SPARC M10-4/M10-4S, see "8.3 Removing a PCI Express Card" in the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.

9.5 Installing the Link Card

This section describes the procedure for installing the link card.

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

1. **Pull out all the PCIe cassettes in which the PCIe cards of the PCI expansion unit are mounted.**
   a. Raise the lever while pressing the latch of the PCIe card cassette. For details, see Figure 7-3.
   b. Hold the lever and carefully pull the PCIe card cassette out of the PCIe slot.
2. **Install link cards in the PCIe cassettes.**
   The procedure for installing a link card in a PCIe cassette is the same as that for installing a PCIe card for each server.
   For details on the SPARC M10-1, see "12.5.1 Installing a PCI Express card" in the *Fujitsu M10-1/SPARC M10-1 Service Manual*.
   For details on the SPARC M10-4/M10-4S, see "8.4.1 Installing a PCI Express card" in the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.
3. **Connect the link and management cables to the link cards.**
4. Install the PCIe cassettes with the link cards mounted on the server.
   The procedure for installation is the same as that for installing PCIe cassettes for each server.
   For details on the SPARC M10-1, see "12.5.2 Installing a PCIe riser" in the *Fujitsu M10-1/SPARC M10-1 Service Manual*.
   For details on the SPARC M10-4/M10-4S, see "8.4.3 Installing a PCI Express card cassette" in the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.</text>

9.6 Restoring the System

This section describes the procedure for restoring the system after link card installation. The restoration procedure differs depending on the maintenance type as

follows:

- Active/hot maintenance (use of PHP)
- Active/hot maintenance (use of DR)
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

9.6.1 Active/hot maintenance (use of PHP)

Note - If you use the PCI Hot Plug (PHP) to mount the link card on the server, remove all the PCIe cards from the PCI expansion unit. Mount the link card on the server before installing the PCIe cards to the PCI expansion unit. Then, use PHP to incorporate these cards to the server.

1. **Mount the PCI expansion unit that uses the link card requiring maintenance on the server.**
   a. Remove all PCI Express card cassettes.
   For details, see "7.4.2 Removing a PCI Express card cassette."
   b. Execute the cfgadm(1) command to mount the link card to which the PCI expansion unit is connected on the logical domain.
   For the Ap_ID, enter the Ap_ID of the link card you noted down before the start of maintenance.

```
# cfgadm -c configure Ap_ID
```

   The locator LED turns off if the link card is successfully mounted on the logical domain.

2. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."

3. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."
   If the firmware version is the same as the one before maintenance, you do not have to perform this step. Go to step 5.

4. **If the firmware has been updated, the firmware must be applied. To do this, execute the cfgadm(1M) command to release the link card requiring maintenance from the logical domain.**

```
# cfgadm -c disconnect Ap_ID
```

5. **Mount the PCI expansion unit in the server again.**
   For details, see "6.1.1 Mounting the link card on the server using PHP."
6. **Close the rack door.**

9.6.2 Active/hot maintenance (use of DR)

1. **Mount the chassis containing the link card requiring maintenance on the physical partition using physical partition dynamic reconfiguration (DR).**
   Perform the procedure in "Mounting the chassis containing the link card on the physical partition" up to step 8.
2. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."
3. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."

   If the firmware version is the same as the one before maintenance, you do not have to perform this step. Go to "Restoring the logical domain to the status it had before maintenance."
4. **Close the rack door.**

9.6.3 Inactive/hot maintenance

1. **Execute the testsb command to confirm that the link card and PCI expansion unit requiring maintenance are recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
2. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."
3. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."

   If the firmware version is the same as the one before maintenance, you do not have to perform this step. Go to step 4.

4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Close the rack door.**

9.6.4 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit or the PSU backplane unit of the server containing the link card requiring maintenance.**
   For details, see "6.3.6 Installing the power cords" in the *Fujitsu M10-1/SPARC M10-1 Service Manual*, or "6.1.1 Installing the power cord" in the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the link card and PCI expansion unit requiring maintenance are recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
4. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."

   If the firmware version is the same as the one before maintenance, you do not have to perform this step. Go to step 6.
6. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
7. **Close the rack door.**

9.6.5 System stopped/hot maintenance

1. **Execute the testsb command to confirm that the link card and PCI expansion unit requiring maintenance are recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

2. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."

3. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."

   If the firmware version is the same as the one before maintenance, you do not have to perform this step. Go to step 4.

4. Start the entire system.
   For details, see "6.3 Starting the Entire System."

5. **Close the rack door.**

9.6.6 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit or the PSU backplane unit of the server containing the link card requiring maintenance.**
   For details, see "6.3.6 Installing the power cords" in the *Fujitsu M10-1/SPARC M10-1 Service Manual*, or "6.1.1 Installing the power cord" in the *Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual*.

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**

3. **Execute the testsb command to confirm that the link card and PCI expansion unit requiring maintenance are recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."

5. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."

   If the firmware version is the same as the one before maintenance, you do not have to perform this step. Go to step 6.

6. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."

7. **Close the rack door.**

Chapter 10

Maintaining the Link Cables

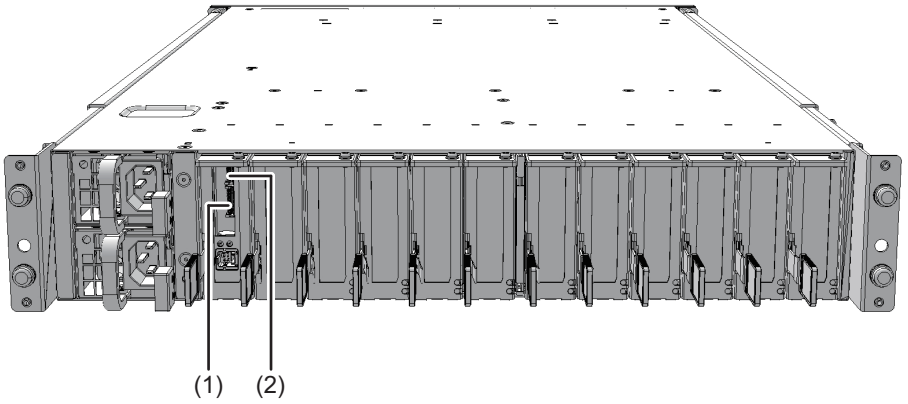
This chapter describes the maintenance procedure for the link cables.

- Configuration of the Link Cable Connection Ports
- Before Maintaining a Link Cable
- Enabling the Removal of a Link Cable
- Removing a Link Cable
- Installing a Link Cable
- Restoring the System

10.1 Configuration of the Link Cable Connection Ports

This section describes the configuration and location of the link cable connection ports.
The link cards of the SPARC M10-1 or SPARC M10-4/M10-4S are connected to the link board of the PCI expansion unit with the link cables and the management cable.

Figure 10-1 Location of link cable connection ports



Location number	Component
1	Link cable (LINKCBL#0)
2	Link cable (LINKCBL#1)

10.2 Before Maintaining a Link Cable

This section describes the maintenance types, flow, and points to remember regarding the link cables.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

10.2.1 Types of maintenance

Table 10-1 lists the types of maintenance for the link cables. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration."

Table 10-1 Types of maintenance for the link cables

-: Not maintainable

Connection destination	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	-	-	-	-	Enabled	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	Enabled (*1)	Enabled (*1)	-	-	Enabled	Enabled
SPARC M10-4S	Enabled (*2)	Enabled (*2)	Enabled	Enabled	Enabled	Enabled

*1: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, the link card cannot use PHP. Using physical partition dynamic reconfiguration (DR), release the link card from the system.

10.2.2 Maintenance flow

Table 10-2 lists the sequence of the maintenance procedure for the link cables. See the relevant section.

Table 10-2 Maintenance flow

Details of update process		Replacement
1	Preparation	10.3
2	Link cable removal	10.4
3	Link cable installation	10.5
4	Restoring the system	10.6

10.2.3 Precautions for replacement

Note the following when performing link cable replacement.

- Do not place any heavy objects on the link cables.
- When performing replacement, replace the two link cables as a set.
- Do not bend the link cables unduly. Excessive bending could damage the link cables. The allowable bending radius for each link cable is shown below.
  Link cable (electrical): Static/dynamic 40 mm (1.6 in.) or greater

  Link cable (optical): Static 35 mm (1.4 in.) or greater/dynamic 58 mm (2.3 in.) or greater
- Before use, confirm that labels (A in the figure) are affixed to the connectors at

both ends of the link cable. For the location of the labels, see Figure 10-2 and Figure 10-3.

Figure 10-2 Label location on a link cable (electrical)

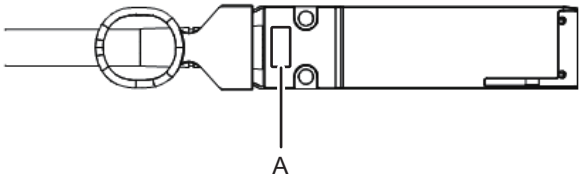
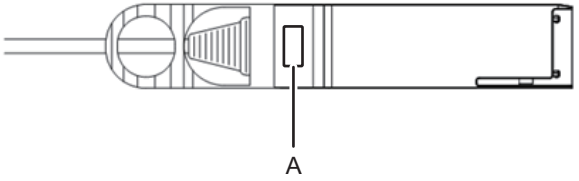
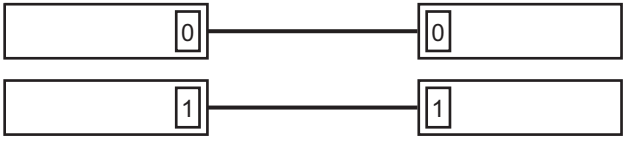


Figure 10-3 Label location on a link cable (optical)



If there is no label, affix one of the labels supplied with the link cable. Affix labels with the same number (0 or 1) to the connectors at both ends of the link cable.

Figure 10-4 State of labels when correctly attached



10.3 Enabling the Removal of a Link Cable

This section describes the preparations that must be completed prior to the removal of the link cables. The preparation procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

10.3.1 Active/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link cables requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Release, from the server, the link card to which the PCI expansion unit requiring maintenance is connected.**
For details, see "5.1.1 Releasing the link card using PHP."
5. **Execute the cfgadm(1M) command to cause the locator LED of the link card to blink so that you can locate the card.**
Enter the Ap_ID of the link card that you noted in advance.

```
# cfgadm -x led=attn, mode=blink Ap_ID
```

6. **Check the following LEDs to determine whether the PCIe card requiring maintenance is actually maintainable.**
   - The ATTENTION LED (amber) of the PCI card slot is blinking.
   - The POWER LED of the PCI card slot is off.

10.3.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link cables requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
   For details, see "5.1 Releasing the Link Card from the Server."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

10.3.3 Inactive/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link cables requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."

10.3.4 Inactive/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link cables requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

10.3.5 System stopped/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link cables requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."

10.3.6 System stopped/cold maintenance

1. **Open the rack door.**

2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link cables requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
For details, see "5.3 Stopping the Entire System."
6. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
- The LED of the link board is off.
- The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

Note - When a dual power feed is installed, record the positions of the power cords before removing them to ensure that they are reinstalled correctly.

10.4 Removing a Link Cable

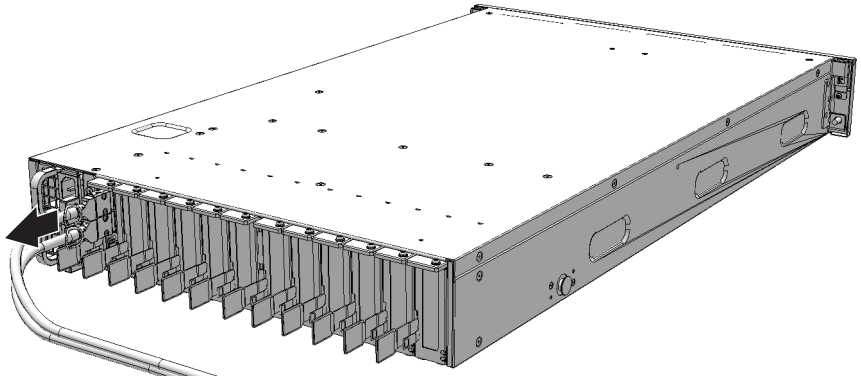
This section describes the procedure for removing a link cable.
Enable removal of the link cable before attempting to remove it. For details, see "10.3 Enabling the Removal of a Link Cable."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

1. **Hold the tabs of the link cables on the PCI expansion unit side, and then remove the two cables.**

Note - Record the positions of the link cables before removing them to ensure that they are reinstalled correctly.

Figure 10-5 Removing the link cable



2. **Remove the two link cables from the SPARC M10-1 or SPARC M10-4/M10-4S, using the same procedure.**

Note - Record the positions of the link cables before removing them to ensure that they are reinstalled correctly.

10.5 Installing a Link Cable

This section describes the procedure for installing the link cables.

1. **Hold the link cable connectors, and connect the two link cables to the link board mounted in the PCI expansion unit.**

Note - Reinstall the link cables in their original positions by referring to the record you made before the start of maintenance.
Note - Confirm that the link cables are connected and firmly secured.

2. **Connect the two link cables to the link card mounted in the SPARC M10-1 or SPARC M10-4/M10-4S by using the same procedure.**

Note - Reinstall the link cables in their original positions by referring to the record that you made before the start of maintenance.
Note - Confirm that the link cables are connected and firmly secured.

10.6 Restoring the System

This section describes the procedure for restoring the system after link cable installation. The restoration procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

10.6.1 Active/hot maintenance

1. **Mount the PCI expansion unit on the server.**
   For details, see "6.1.1 Mounting the link card on the server using PHP."
2. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

3. **Close the rack door.**

10.6.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**

3. **Mount the PCI expansion unit on the server.**
   For details, see "6.1 Mounting the Link Card on the Server."
4. **Close the rack door.**

10.6.3 Inactive/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
3. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
4. **Close the rack door.**

10.6.4 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Close the rack door.**

10.6.5 System stopped/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

3. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
4. **Close the rack door.**

10.6.6 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
5. **Close the rack door.**

Chapter 11

Maintaining the Management Cable

This chapter describes the maintenance procedure for the management cable.

- Configuration of the Management Cable Connection Port
- Before Maintaining the Management Cable
- Enabling the Removal of the Management Cable
- Removing the Management Cable
- Installing the Management Cable
- Restoring the System

11.1 Configuration of the Management Cable Connection Port

This section describes the configuration and location of the management cable connection port.
The link cards of the SPARC M10-1 or SPARC M10-4/M10-4S are connected to the link board of the PCI expansion unit with the link cables and the management cable.

Figure 11-1 Location of management cable connection port

Location number	Component
1	Management cable (MGCBL)

11.2 Before Maintaining the Management Cable

This section describes the maintenance types and flow for the management cable.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

11.2.1 Types of maintenance

Table 11-1 lists the types of maintenance for the management cable. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration."

Table 11-1 Types of maintenance for the management cable

-: Not maintainable

Connection destination	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	-	-	-	-	Enabled	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	Enabled (*1)	Enabled (*1)	-	-	Enabled	Enabled
SPARC M10-4S	Enabled (*2)	Enabled (*2)	Enabled	Enabled	Enabled	Enabled

*1: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, the link card cannot use PHP. Using physical partition dynamic reconfiguration (DR), release the link card from the system.

11.2.2 Maintenance flow

Table 11-2 lists the sequence of the maintenance procedure for the management cable. See the relevant section.

Table 11-2 Maintenance flow

Details of update process		Replacement
1	Preparation	11.3
2	Management cable removal	11.4
3	Management cable installation	11.5
4	Restoring the system	11.6

11.3 Enabling the Removal of the Management Cable

This section describes the preparations that must be completed prior to removing the management cable. The preparation procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance

- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

11.3.1 Active/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the management cable requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Release, from the server, the link card to which the PCI expansion unit requiring maintenance is connected.**
For details, see "Making the link card ready to be released."
5. **Execute the cfgadm(1M) command to cause the locator LED of the link card to blink so that you can locate the card.**
Enter the Ap_ID of the link card that you noted in advance.

```
# cfgadm -x led=attn, mode=blink Ap_ID
```

6. **Check the following LEDs to determine whether the PCIe card requiring maintenance is actually maintainable.**
   - The ATTENTION LED (amber) of the PCI card slot is blinking.
   - The POWER LED of the PCI card slot is off.

11.3.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the management cable requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
For details, see "5.1 Releasing the Link Card from the Server."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
- The LED of the link board is off.
- The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

11.3.3 Inactive/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the management cable requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."

11.3.4 Inactive/cold maintenance

1. **Open the rack door.**

2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the management cable requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
- The LED of the link board is off.
- The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

11.3.5 System stopped/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the management cable requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
For details, see "5.3 Stopping the Entire System."

11.3.6 System stopped/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the management cable requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
For details, see "5.3 Stopping the Entire System."
6. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

11.4 Removing the Management Cable

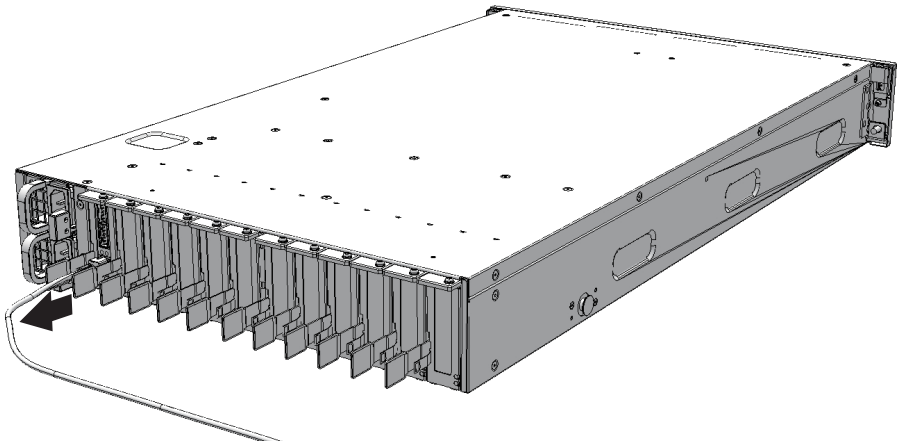
This section describes the procedure for removing the management cable.
Enable removal of the management cable before attempting to remove it. For details, see "11.3 Enabling the Removal of the Management Cable."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

1. **Push the latch lock of the management cable on the PCI expansion unit, and then remove the management cable.**

Note - If you cannot not reach the latch lock of the connector, depress the latch with a flat head screwdriver and then remove the management cable. Do not use excessive force. Otherwise, the link board could be damaged.

Figure 11-2 Management cable removal



2. **Remove the management cable from the SPARC M10-1 or SPARC M10-4/M10-4S in the same way.**

11.5 Installing the Management Cable

This section describes the procedure for installing the management cable.

1. **Hold the connector of the management cable, and connect the management cable to the link board mounted on the PCI expansion unit.**

Note - Confirm that the management cable is securely connected.

2. **Connect the management cable to the link card mounted in the SPARC M10-1 or SPARC M10-4/M10-4S in the same way.**

Note - Confirm that the management cable is securely connected.

11.6 Restoring the System

This section describes the procedure for restoring the system after management cable installation. The restoration procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

11.6.1 Active/hot maintenance

1. **Mount the PCI expansion unit on the server.**
   For details, see "6.1.1 Mounting the link card on the server using PHP."
2. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

3. **Close the rack door.**

11.6.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Mount the PCI expansion unit on the server.**
   For details, see "6.1 Mounting the Link Card on the Server."
4. **Close the rack door.**

11.6.3 Inactive/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

3. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
4. **Close the rack door.**

11.6.4 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Close the rack door.**

11.6.5 System stopped/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
3. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
4. **Close the rack door.**

11.6.6 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
5. **Close the rack door.**

Chapter 12

Maintaining the Power Supply Units

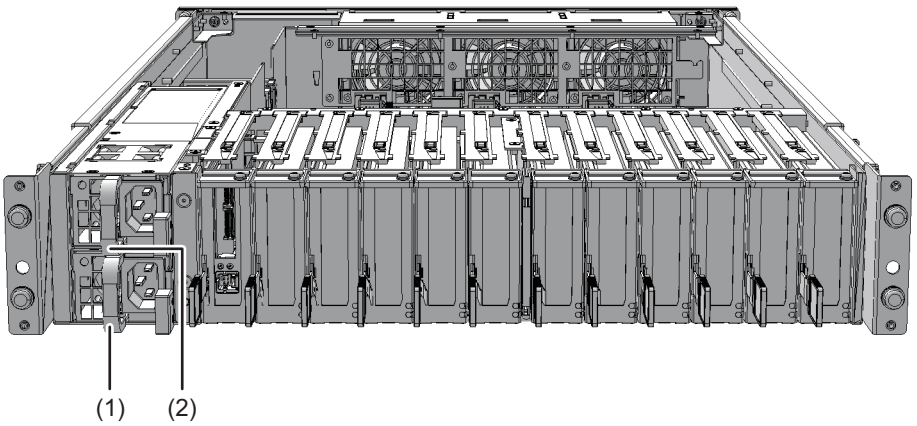
This chapter describes the maintenance procedure for the power supply units.

- Configuration of the Power Supply Units
- Before Maintaining a Power Supply Unit
- Enabling the Removal of a Power Supply Unit
- Removing a Power Supply Unit
- Installing a Power Supply Unit
- Restoring the System

12.1 Configuration of the Power Supply Units

This section describes the configuration and the locations of the power supply units. The power supply units supply power to each component. To provide redundancy, two power supply units are mounted in the PCI expansion unit. If one power supply unit fails while the system is running, the 1+1 redundant configuration allows the system to continue operating.

Figure 12-1 Location of the power supply units



Location number	Component
1	Power supply unit (PSU#0)
2	Power supply unit (PSU#1)

12.2 Before Maintaining a Power Supply Unit

This section describes the types of maintenance for the power supply units, the maintenance flow, and precautions to observe.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

12.2.1 Types of maintenance

Table 12-1 lists the types of maintenance for the power supply units. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration."

Table 12-1 Types of maintenance for the power supply unit

-: Not maintainable

Connection destination	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	Enabled (*1)	-	-	-	Enabled	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	Enabled (*1)	Enabled (*2)	-	-	Enabled	Enabled
SPARC M10-4S	Enabled (*1)	Enabled (*3)	Enabled	Enabled	Enabled	Enabled

*1: This is supported only for a redundant configuration.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*3: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting of the direct I/O function is enabled, the link card cannot use PHP. Using physical partition dynamic reconfiguration (DR), release the link card from the system.

12.2.2 Maintenance flow

Table 12-2 lists the sequence of the maintenance procedure for the power supply units. See the relevant section.

Table 12-2 Maintenance flow

Details of update process		Replacement
1	Preparation	12.3
2	Removing a power supply unit	12.4
3	Installing a power supply unit	12.5
4	Restoring the system	12.6

12.2.3 Precautions for replacement

Note the following points when you replace a power supply unit:

- Active/hot maintenance is supported only for a redundant configuration.
- The power supply has a redundant configuration featuring two units. Thus, the system can continue to function even if one of these units fails. The system should not, however, be operated for an extended period with one failed unit.
- When multiple power supply units are to be replaced, perform the replacement one by one. If redundancy of the power supply units cannot be secured, cold maintenance must be executed.
- Do not force a power supply unit into its slot. Using excessive force may damage

the component or the chassis.

12.3 Enabling the Removal of a Power Supply Unit

This section describes the preparations that must be completed prior to the removal of a power supply unit. The preparation procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

12.3.1 Active/hot maintenance

Note - Active/hot maintenance is supported only for a redundant configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the power supply unit requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink so that you can locate the unit.**
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Execute the ioxadm command to stop the power supply unit requiring maintenance.**
   In the following example, PSU#0 of PCIBOX#12B4 is specified.

```
XSCF> ioxadm poweroff PCIBOX#12B4/PSU#0
```

6. **Confirm that the LED on the power supply unit requiring maintenance is blinking.**
7. **Remove the power cord from the power supply unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

12.3.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the power supply unit requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.4 Checking log information."
4. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
   For details, see "5.1 Releasing the Link Card from the Server."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

12.3.3 Inactive/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the power supply unit requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Remove the power cord from the power supply unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

12.3.4 Inactive/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the power supply unit requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

12.3.5 System stopped/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the power supply unit requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
For details, see "5.3 Stopping the Entire System."
6. **Remove the power cord from the power supply unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

12.3.6 System stopped/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the link cables requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."
6. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - When a dual power feed is installed, record the positions of the power cords before removing them to ensure that they are reinstalled correctly.

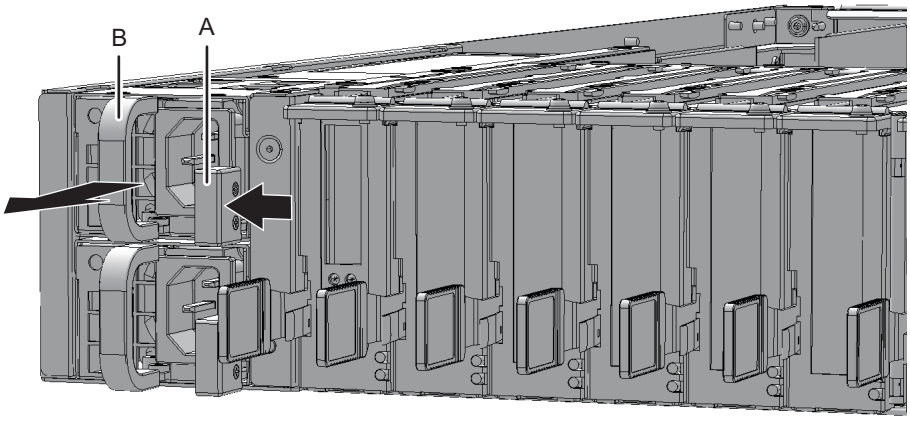
12.4 Removing a Power Supply Unit

This section describes the procedure for removing a power supply unit.
Enable the removal of the power supply unit before attempting to remove it. For details, see "12.3 Enabling the Removal of a Power Supply Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

1. **Push the lever of the power supply unit requiring maintenance (A in the figure) in the direction of the arrow to release the lock, and then pull out the unit by grasping the handle (B in the figure).**

Figure 12-2 Removing a power supply unit



2. **Using your other hand, support the power supply unit from below and carefully remove it from the slot.**

Note - Place the removed power supply unit on a grounded antistatic ESD mat.

12.5 Installing a Power Supply Unit

This section describes the procedure for installing a power supply unit.

1. **With one hand, support the power supply unit from below and then carefully insert it into its slot.**

Note - Do not forcibly push the power supply unit into its slot. Using excessive force may damage the component or the chassis.

2. **Push the power supply unit fully home.**

Note - Make sure that the power supply unit is firmly inserted and fixed.

12.6 Restoring the System

This section describes the procedures for restoring the system after installing a power supply unit. The restoration procedure differs depending on the maintenance type as

follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

12.6.1 Active/hot maintenance

1. **Connect the power cords to the power supply unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - Confirm that the LED (green) on the power supply unit is blinking.

2. **Execute the ioxadm command to supply power to the power supply unit.**
   In the following example, PSU#0 of PCIBOX#12B4 is specified.

```
XSCF> ioxadm poweron PCIBOX#12B4/PSU#0
```

3. **Execute the ioxadm -v list command to check whether Status of the maintained power supply unit is On.**

```
XSCF> ioxadm -v list
```

4. **Execute the showstatus command to check that the reinstalled power supply unit is operating normally.**

```
XSCF> showstatus
```

5. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

6. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

7. **Close the rack door.**

12.6.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Mount the PCI expansion unit on the server.**
   For details, see "6.1 Mounting the Link Card on the Server."
4. **Close the rack door.**

12.6.3 Inactive/hot maintenance

1. **Connect the power cords to the power supply unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - Confirm that the LED (green) on the power supply unit is blinking.

2. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."

```
XSCF> ioxadm locator off PCIBOX#12B4
```

5. **Close the rack door.**

12.6.4 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Close the rack door.**

12.6.5 System stopped/hot maintenance

1. **Connect the power cords to the power supply unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - Confirm that the LED (green) on the power supply unit is blinking.

2. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."

```
XSCF> ioxadm locator off PCIBOX#12B4
```

5. **Close the rack door.**

12.6.6 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."

5. **Close the rack door.**

Chapter 13

Maintaining the Fan Units

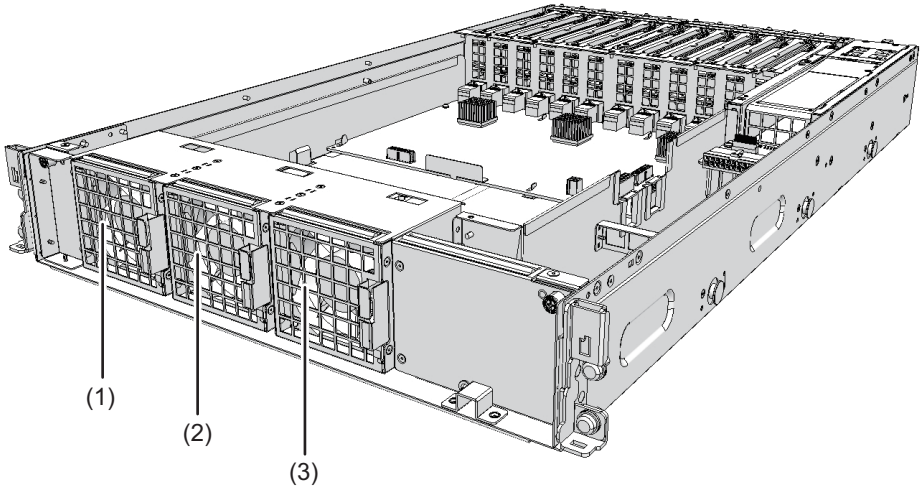
This chapter describes the maintenance procedure for the fan units.

- Configuration of the Fan Units
- Before Maintaining a Fan Unit
- Enabling the Removal of a Fan Unit
- Removing a Fan Unit
- Installing a Fan Unit
- Restoring the System

13.1 Configuration of the Fan Units

This section describes the configuration and the locations of the fan units.
A PCI expansion unit has three fan units for cooling the components in the chassis. If one fan unit fails while the system is running, the 2+1 redundant configuration allows the system to continue operating.

Figure 13-1 Fan unit locations



Location number	Component
1	Fan unit (FAN#0)
2	Fan unit (FAN#1)
3	Fan unit (FAN#2)

13.2 Before Maintaining a Fan Unit

This section describes the types of maintenance for the fan units, the maintenance flow, and some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

13.2.1 Types of maintenance

Table 13-1 lists the types of maintenance for the fan units. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration."

Table 13-1 Types of maintenance for fan unit

-: Not maintainable

Connection destination	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	Enabled	-	-	-	Enabled	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	Enabled	Enabled (*1)	-	-	Enabled	Enabled
SPARC M10-4S	Enabled	Enabled (*2)	Enabled	Enabled	Enabled	Enabled

*1: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, the link card cannot use PHP. Using physical partition dynamic reconfiguration (DR), release the link card from the system.

13.2.2 Maintenance flow

Table 13-2 shows the maintenance procedure for the fan units. See the relevant section.

Table 13-2 Maintenance flow

Details of update process		Replacement
1	Preparation	13.3
2	Fan unit removal	13.4
3	Installing a fan unit	13.5
4	Restoring the system	13.6

13.2.3 Precautions for replacement

Note the following points when replacing a fan unit:

- When replacing multiple fan units, replace no more than one unit at a time. If the redundancy of the fan units cannot be secured, system-stopped maintenance must be executed.
- The fan units have a redundant configuration; therefore, even if one fan unit fails, the system can continue operating. Do not, however, operate the system for an extended period with a failed fan unit. Replace the failed fan unit as quickly as possible.

13.3 Enabling the Removal of a Fan Unit

This section describes the precautions that must be completed prior to removing a fan unit. The preparation procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

13.3.1 Active/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the fan unit requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink so that you can locate the unit.**
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Execute the ioxadm command to stop the fan unit requiring maintenance.**
In the following example, FAN#0 of PCIBOX#12B4 is specified.

```
XSCF> ioxadm poweroff PCIBOX#12B4/FAN#0
```

13.3.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the fan unit requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
For details, see "5.1 Releasing the Link Card from the Server."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
- The LED of the link board is off.
- The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

13.3.3 Inactive/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the fan unit requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**

For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."

13.3.4 Inactive/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the fan unit requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

13.3.5 System stopped/hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the fan unit requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."

13.3.6 System stopped/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the fan unit requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink, allowing you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."
6. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - When a dual power feed is installed, record the positions of the power cords before removing them to ensure that they are reinstalled correctly.

13.4 Removing a Fan Unit

This section describes the procedure for removing a fan unit.
Enable the removal of the fan unit before attempting to remove it. For details, see "13.3 Enabling the Removal of a Fan Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

13.4.1 Accessing a fan unit

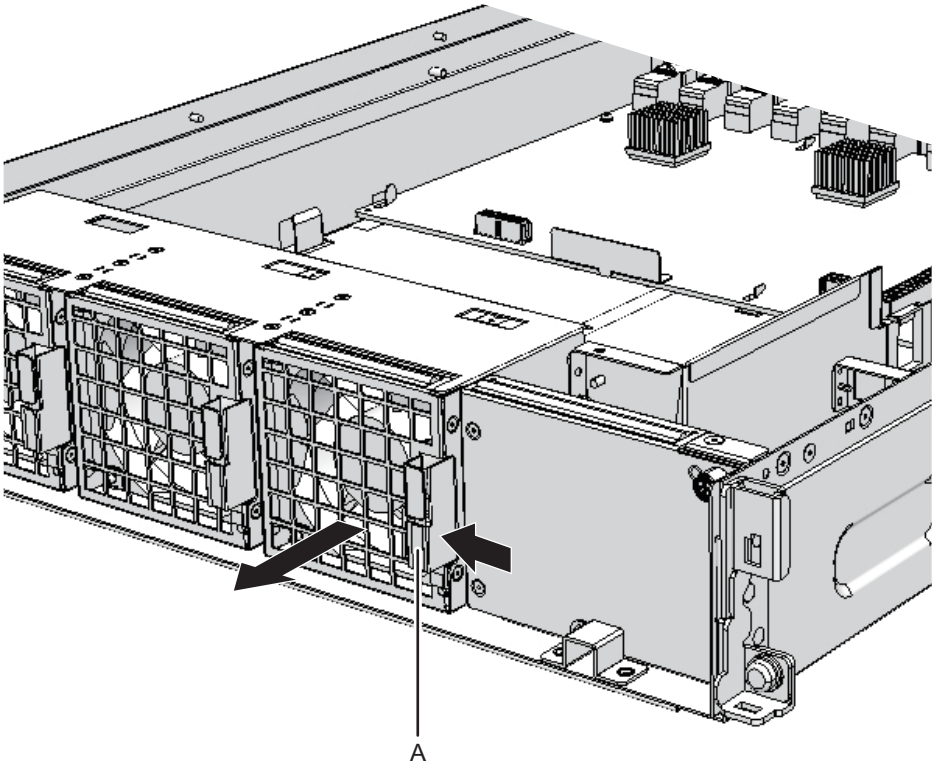
1. **Remove the front cover.**
   For details, see "5.4.2 Removing the front cover."

13.4.2 Removing a fan unit

1. **Press the handle (A in the figure) of the unit requiring maintenance to the left and then remove the fan unit from its slot.**

Note - Place the removed fan unit on the grounded ESD mat to ground any static electricity.

Figure 13-2 Fan unit removal



13.5 Installing a Fan Unit

This section describes the procedure for installing a fan unit.

13.5.1 Installing a fan unit

1. **Insert the fan unit into its slot.**

Note - Do not force the fan unit into the slot. Using excessive force may damage the component or the chassis.

2. **Firmly push the fan unit into its mounting location.**

Note - Confirm that the fan unit is inserted securely.

13.5.2 Restoring the chassis

1. **Install the front cover.**
   For details, see "6.4.2 Installing the front cover."

13.6 Restoring the System

This section describes the procedure for restoring the system after installing a fan unit. The restoration procedure differs depending on the maintenance type as follows:

- Active/hot maintenance
- Active/cold maintenance
- Inactive/hot maintenance
- Inactive/cold maintenance
- System stopped/hot maintenance
- System stopped/cold maintenance

13.6.1 Active/hot maintenance

1. **Execute the ioxadm command to supply power to the fan unit.**
   In the following example, FAN#0 of PCIBOX#12B4 is specified.

```
XSCF> ioxadm poweron PCIBOX#12B4/FAN#0
```

2. **Execute the showstatus command to check that the replaced fan unit is operating normally.**

```
XSCF> showstatus
```

3. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

4. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

5. **Close the rack door.**

13.6.2 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

---

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Mount the PCI expansion unit on the server.**
   For details, see "6.1 Mounting the Link Card on the Server."
4. **Close the rack door.**

13.6.3 Inactive/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI expansion unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

3. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
4. **Close the rack door.**

13.6.4 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Close the rack door.**

13.6.5 System stopped/hot maintenance

1. **Execute the ioxadm command to turn off the CHECK LED of the PCI**

expansion unit.
In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator off PCIBOX#12B4
```

2. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

3. **Start the entire system.**
For details, see "6.3 Starting the Entire System."
4. **Close the rack door.**

13.6.6 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Start the entire system.**
For details, see "6.3 Starting the Entire System."
5. **Close the rack door.**

Chapter 14

Maintaining the PCI Tray

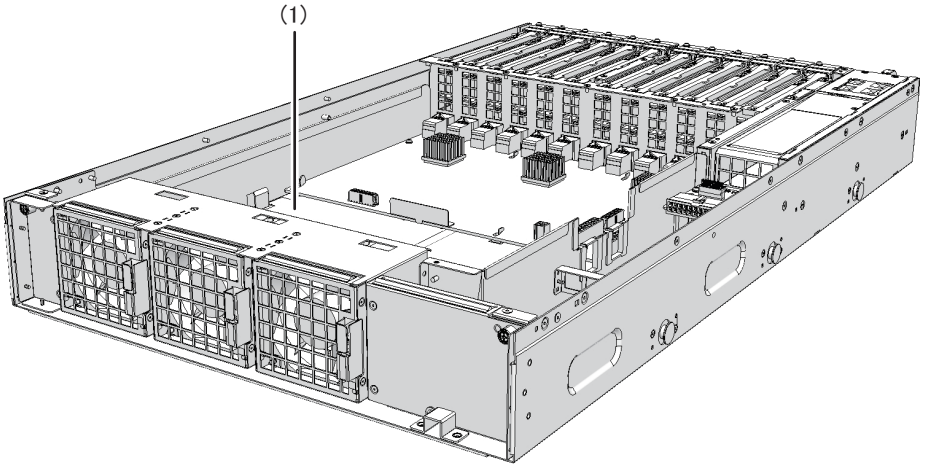
This chapter describes the maintenance procedure for the PCI tray.

- Configuration of the PCI Tray
- Before Maintaining the PCI Tray
- Enabling the Removal of the PCI Tray
- Removing the PCI Tray
- Installing the PCI tray
- Restoring the System

14.1 Configuration of the PCI Tray

This section describes the configuration and location of the PCI tray.
The PSU backplane, I/O board, and fan backplane are mounted on the PCI tray. When the PCI tray is to be replaced, replace the PCI tray and PSU backplane at the same time. The I/O board and the fan backplane must be reinstalled on the new PCI tray.

Figure 14-1 PCI tray location



Location number	Component
1	PCI tray (TRAY)

14.2 Before Maintaining the PCI Tray

This section describes the maintenance types and flow for the PCI tray.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

14.2.1 Types of maintenance

Table 14-1 lists the types of maintenance for the PCI tray. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration."

Table 14-1 Types of maintenance for PCI tray

-: Not maintainable

Connection destination	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	-	-	-	-	-	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	-	Enabled (*1)	-	-	-	Enabled
SPARC M10-4S	-	Enabled (*2)	-	Enabled	-	Enabled

*1: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, the link card cannot use PHP. Using physical partition dynamic reconfiguration (DR), release the link card from the system.

14.2.2 Maintenance flow

Table 14-2 lists the sequence of the maintenance procedure for the PCI tray. See the relevant section.

Table 14-2 Maintenance flow

Details of update process		Replacement
1	Preparation	14.3
2	PCI tray removal	14.4
3	PCI Tray installation	14.5
4	Restoring the system	14.6

14.3 Enabling the Removal of the PCI Tray

This section describes the preparations that must be completed prior to the removal of the PCI tray. The preparation procedure differs depending on the maintenance type as follows:

- Active/cold maintenance
- Inactive/cold maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

14.3.1 Active/cold maintenance

Note - Active/cold maintenance is performed using either of two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the PCI tray requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
For details, see "5.1 Releasing the Link Card from the Server."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

14.3.2 Inactive/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the PCI tray requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

14.3.3 System stopped/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the PCI tray requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink so that you can locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."
6. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit of the PCI expansion**

unit requiring maintenance.
For details, see "5.4.1 Removing the power cords."

Note - When a dual power feed is installed, record the positions of the power cords before removing them to ensure that they are reinstalled correctly.

14.4 Removing the PCI Tray

This section describes the procedure for removing the PCI tray.
Enable the removal of the PCI tray before attempting to remove it. For details, see "14.3 Enabling the Removal of the PCI Tray."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

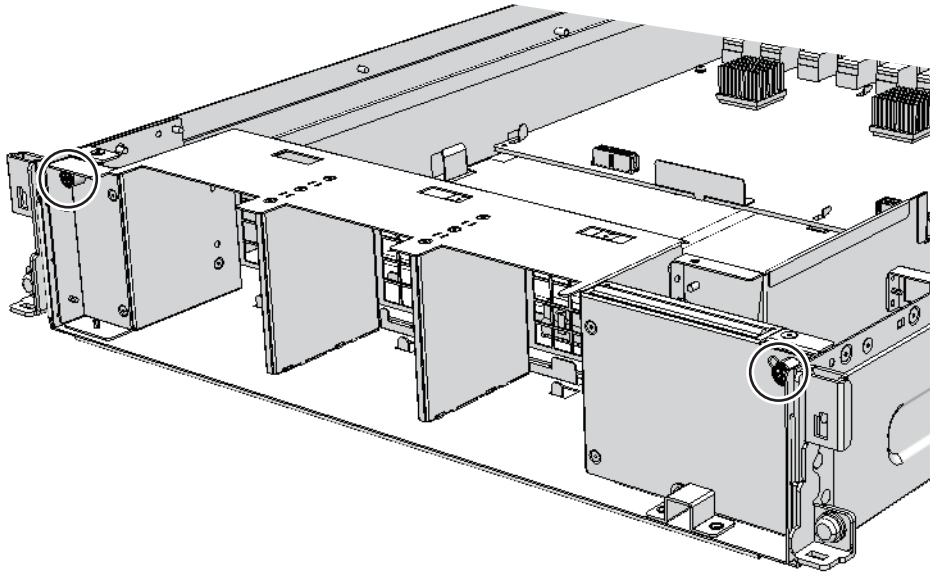
14.4.1 Accessing the PCI tray

1. **Pull out the following components halfway.**
   - Power supply unit
     For details, see "12.4 Removing a Power Supply Unit."
   - PCI Express (PCIe) card cassette
     For details, see "7.4.2 Removing a PCI Express card cassette."
2. **Remove the front cover.**
   For details, see "5.4.2 Removing the front cover."
3. **Remove all the fan units.**
   For details, see "13.4.2 Removing a fan unit."

14.4.2 Removing the PCI tray

1. **Loosen the two screws securing the PCI tray and then slightly pull it out.**

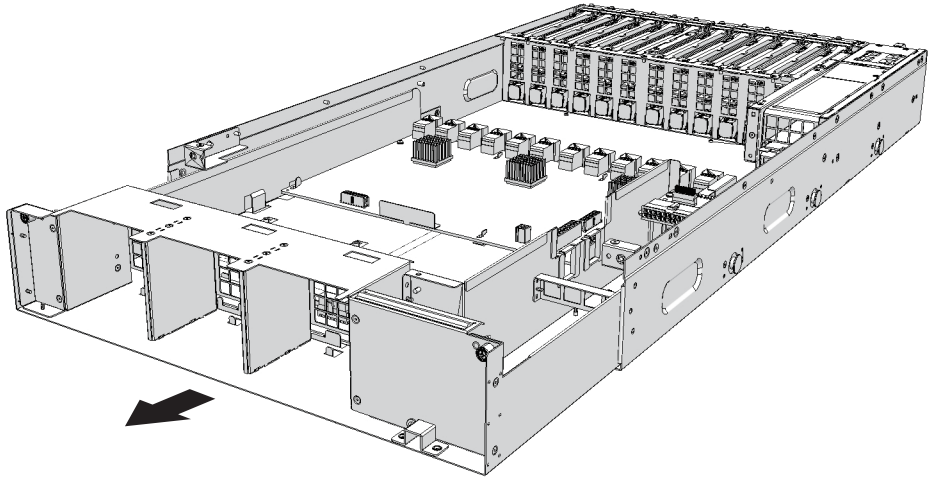
Figure 14-2 Screw for PCI tray



2. **Hold the PCI tray with both hands and carefully remove it from the chassis.**

Note - Place the removed PCI tray on the grounded ESD mat to ground any static electricity.

Figure 14-3 PCI tray removal



14.4.3 Removing the components of the PCI tray

1. **Remove the I/O board from the PCI tray.**
   For details, see "15.4.2 Removing the I/O board."
2. **Remove the fan backplane from the PCI tray.**
   For details, see "16.4.2 Removing the fan backplane."

14.5 Installing the PCI Tray

This section describes the procedure for installing the PCI tray.

14.5.1 Installing the components of the PCI tray

1. **Install the I/O board on the replaced PCI tray.**
   For details, see "15.5.1 Installing the I/O board."
2. **Install the fan backplane on the PCI tray.**
   For details, see "16.5.1 Installing the fan backplane."

14.5.2 Installing the PCI tray

1. **Hold the PCI tray with both hands and carefully insert it into the chassis.**

Caution - Confirm that the PCI tray is inserted and securely fixed.

2. **Tighten the two screws holding the PCI tray.**

14.5.3 Restoring the chassis

1. **Install all the fan units.**
   For details, see "13.5.1 Installing a fan unit."
2. **Install the front cover.**
   For details, see "6.4.2 Installing the front cover."
3. **Install all the components listed below.**
   - Power supply unit
     For details, see "12.5 Installing a Power Supply Unit."
   - PCIe card cassette

For details, see "7.5.2 Installing a PCI Express card cassette."

14.6 Restoring the System

This section describes the procedure for restoring the system after PCI tray installation. The restoration procedure differs depending on the maintenance type as follows:

- Active/cold maintenance
- Inactive/cold maintenance
- System stopped/cold maintenance

14.6.1 Active/cold maintenance

Note - Active/cold maintenance is performed using either of two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method of using physical partition dynamic reconfiguration (DR) is usable only when the destination has the building block configuration of the SPARC M10-4S.

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Mount the PCI expansion unit on the server.**
   For details, see "6.1 Mounting the Link Card on the Server."
4. **Close the rack door.**

14.6.2 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Close the rack door.**

14.6.3 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance has been recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
4. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
5. **Close the rack door.**

Chapter 15

Maintaining the I/O Board

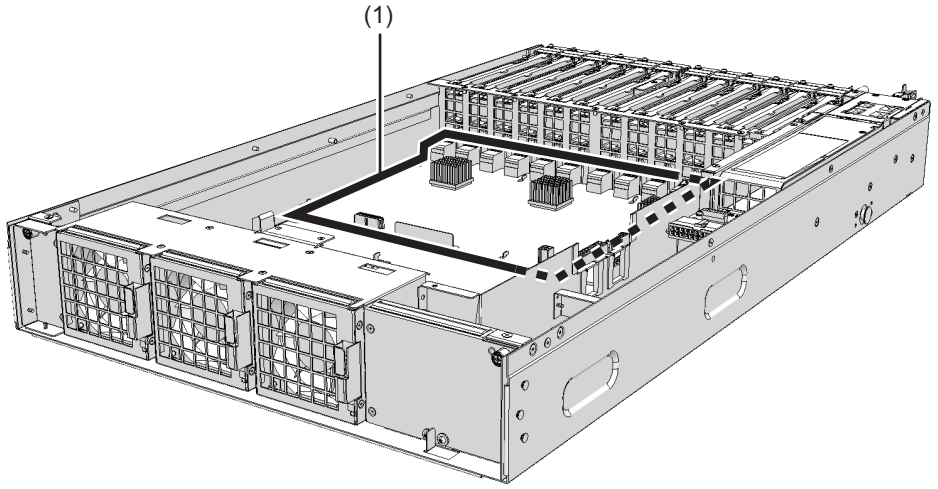
This chapter describes the maintenance procedure for the I/O board.

- Configuration of the I/O Board
- Before Maintaining the I/O Board
- Enabling the Removal of the I/O Board
- Removing the I/O Board
- Installing the I/O board
- Restoring the System

15.1 Configuration of the I/O Board

This section describes the configuration and location of the I/O board.
Eleven PCI Express (PCIe) slots and one slot for the link board are provided on the I/O board.

Figure 15-1 Location of the I/O board



Location number	Component
1	I/O board (IOB)

15.2 Before Maintaining the I/O Board

This section describes the maintenance types and flow for the I/O board.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

15.2.1 Types of maintenance

Table 15-1 lists the types of maintenance for the I/O board. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration."

Table 15-1 Types of maintenance for I/O board

-: Not maintainable

Connection destination	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	-	-	-	-	-	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	-	Enabled (*1)	-	-	-	Enabled
SPARC M10-4S	-	Enabled (*2)	-	Enabled	-	Enabled

*1: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting of the direct I/O function is enabled, the link card cannot use PHP. Using physical partition dynamic reconfiguration (DR), release the link card from the system.

15.2.2 Maintenance flow

Table 15-2 lists the sequence of the maintenance procedure for the I/O board. See the relevant section.

Table 15-2 Maintenance flow

Details of update process		Replacement
1	Preparation	15.3
2	I/O board removal	15.4
3	I/O board installation	15.5
4	Restoring the system	15.6

15.2.3 Precautions for replacement

Observe the following when replacing the I/O board:

- Before replacing the I/O board, check the firmware version. The firmware of the PCI expansion unit has been installed on the link card and the I/O board. When replacing the I/O board, however, the firmware version cannot be automatically matched to the one before the replacement. For this reason, you must use a confirmed firmware version to match it to the firmware version before the replacement. If you cannot recognize the PCI expansion unit from the XSCF, check the firmware version of a part that has not been replaced after the replacement to match it to the firmware version before the replacement.
- When you replace the I/O board and the link card at the same time, check the

firmware version before the replacement. If you replace the I/O board and the link card at the same time without checking the firmware version, you may not be able to match the version.

- Do not replace the I/O board and the fan backplane at the same time. When you replace the I/O board and the fan backplane at the same time, all the serial numbers of the PCI expansion unit are changed to 0 ("0000000000"). If all these serial numbers are changed to 0 ("0000000000"), use the ioxadm command of the XSCF firmware to restore the serial numbers. If you replace both the I/O board and the fan backplane, replace either one, and then start the physical partition connected to the PCI expansion unit to determine the error log information on the PCI expansion unit. After confirming that no error log information is displayed, replace the other Field Replaceable Unit (FRU).
- If multiple PCI expansion units are used and they are combined such that their firmware versions match, there will be no problem with the operation even if the PCI expansion units are using different firmware versions.

15.3 Enabling the Removal of the I/O Board

This section describes the preparations that must be completed prior to the removal of the I/O board. The preparation procedure differs depending on the maintenance type as follows:

- Active/cold maintenance
- Inactive/cold maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

15.3.1 Active/cold maintenance

Note - For active/cold maintenance that does not use PHP, it is necessary to release the server requiring maintenance from the physical partition using physical partition dynamic reconfiguration (DR). For details on the versions of XCP and Oracle VM Server for SPARC/SRU that support DR, see the latest product note.
Note - Active/cold maintenance is enabled only for the building block of the SPARC M10-4S.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the I/O board requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Check the serial number and the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
   For details, see "5.1 Releasing the Link Card from the Server."
6. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

15.3.2 Inactive/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the I/O board requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Check the serial number and the firmware version of the PCI expansion unit.**
   For details, see "For maintenance with the system stopped" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
6. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.

7. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

15.3.3 System stopped/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the I/O board requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.4 Checking log information."

4. **Check the serial number and the firmware version of the PCI expansion unit.**
   For details, see "For maintenance with the system stopped" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance and thus allow you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

6. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."
7. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
8. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - When a dual power feed is installed, record the positions of the power cords before removing them to ensure that they are reinstalled correctly.

15.4 Removing the I/O Board

This section describes the procedure for removing the I/O board.
Enable the removal of the I/O board before attempting to remove it. For details, see "15.3 Enabling the Removal of the I/O Board."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

15.4.1 Accessing the I/O board

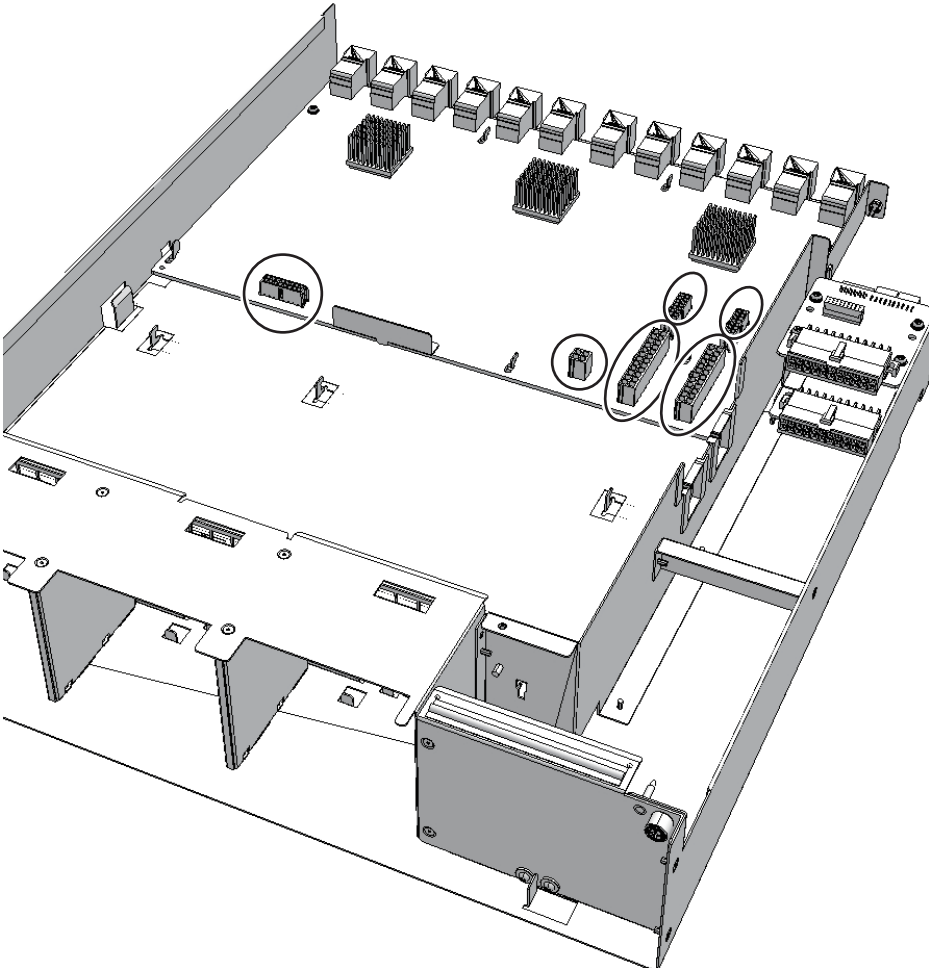
1. **Pull the following components out halfway.**
   - Power supply unit
     For details, see "12.4 Removing a Power Supply Unit."
   - PCIe card cassette
     For details, see "7.4.2 Removing a PCI Express card cassette."
2. **Remove the front cover.**
   For details, see "5.4.2 Removing the front cover."
3. **Remove all the fan units.**
   For details, see "13.4.2 Removing a fan unit."
4. **Remove the PCI tray.**
   For details, see "14.4.2 Removing the PCI tray."

15.4.2 Removing the I/O board

1. **Remove the six cables connected to the I/O board.**

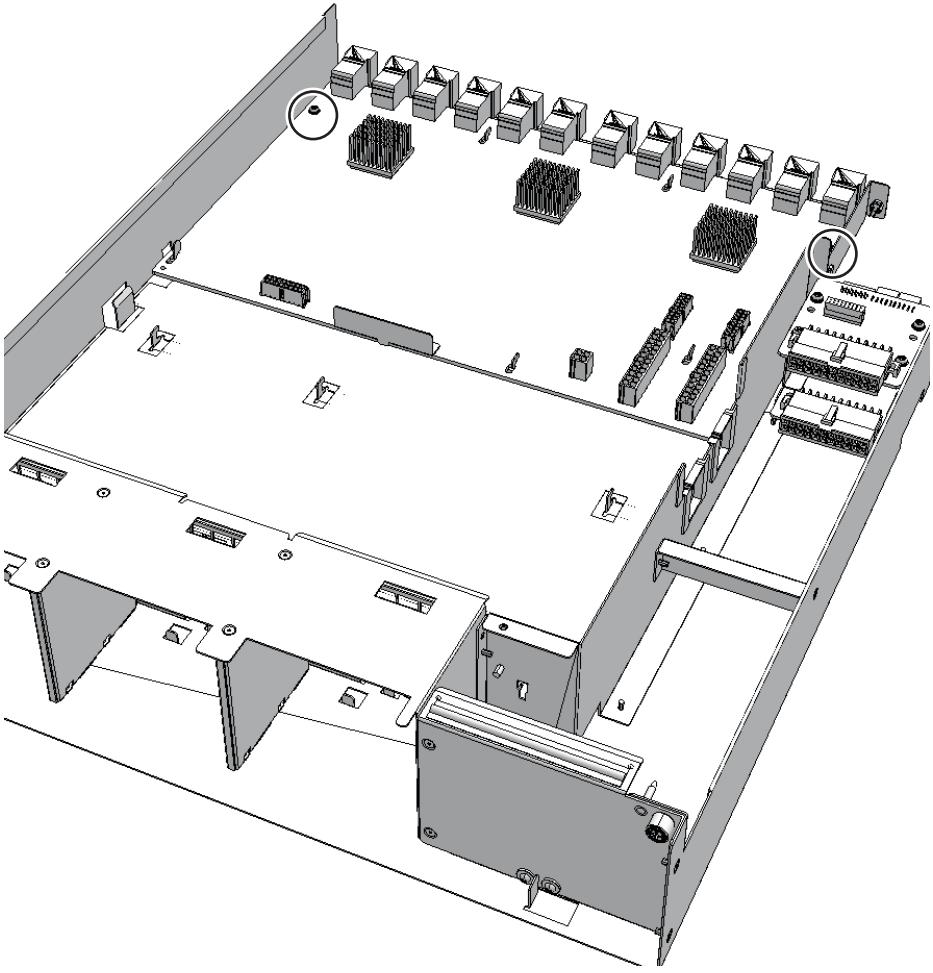
Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.

Figure 15-2 I/O board cables



2. **Loosen the two screws securing the I/O board.**

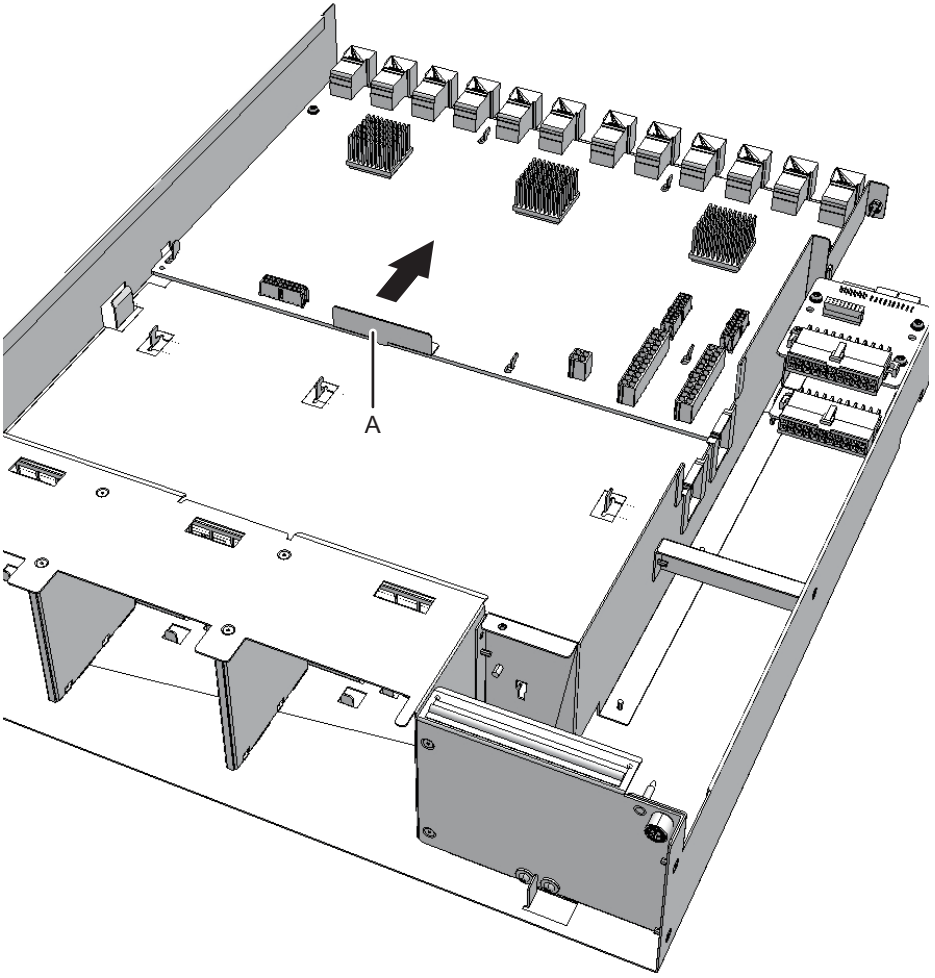
Figure 15-3 I/O board screws



3. **Hold and slide the guide (A in the figure) of the I/O board toward the rear of the chassis and then remove the board.**

Note - Do not remove the I/O board by holding its connectors.
Note - Place the removed I/O board on the grounded ESD mat to eliminate any static electricity.

Figure 15-4 I/O board removal



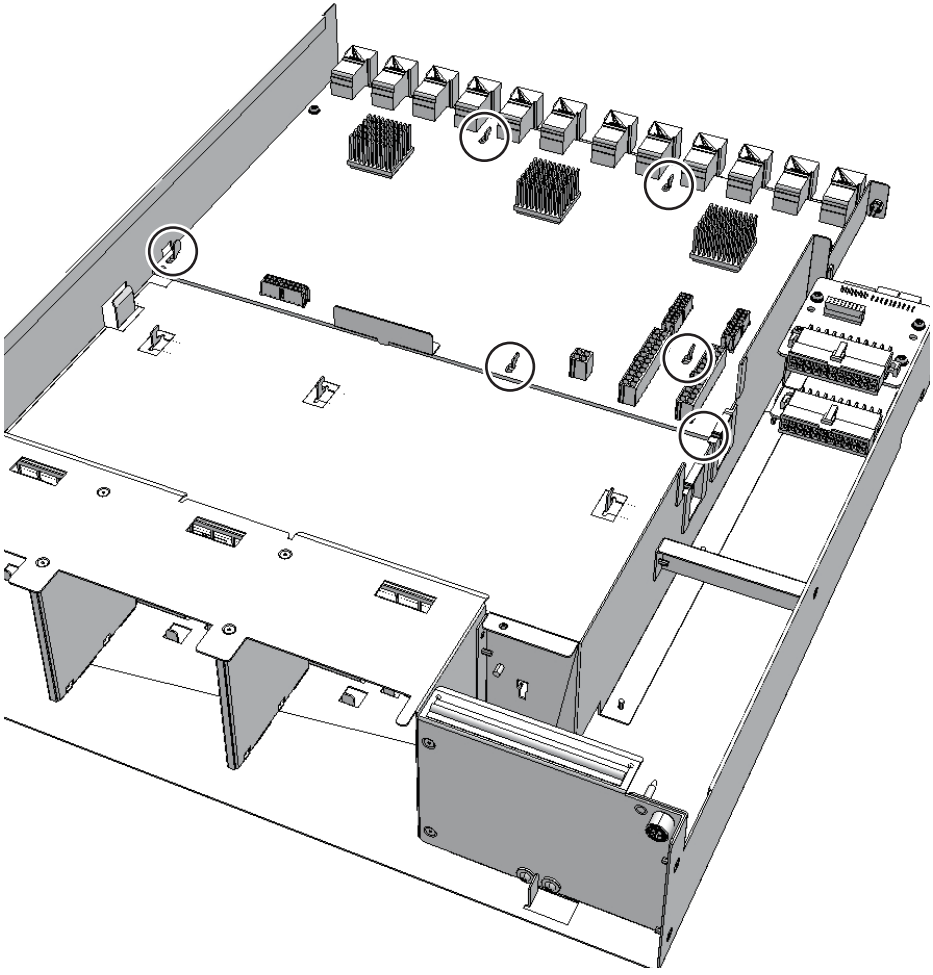
15.5 Installing the I/O Board

This section describes the procedure for installing the I/O board.

15.5.1 Installing the I/O board

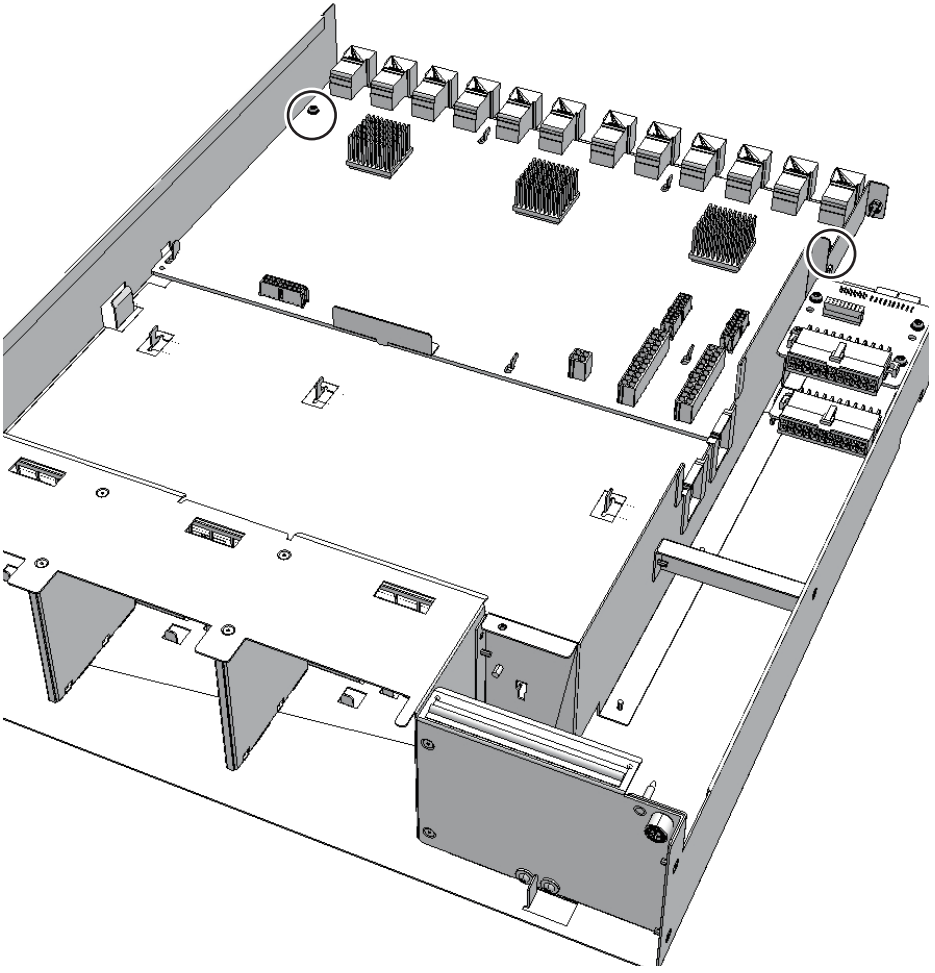
1. **Install the I/O board, adjusting it to align with the six stoppers. Hold and slide the guide to the front of the chassis.**

Figure 15-5 I/O board stoppers



2. **Tighten the two screws securing the I/O board.**

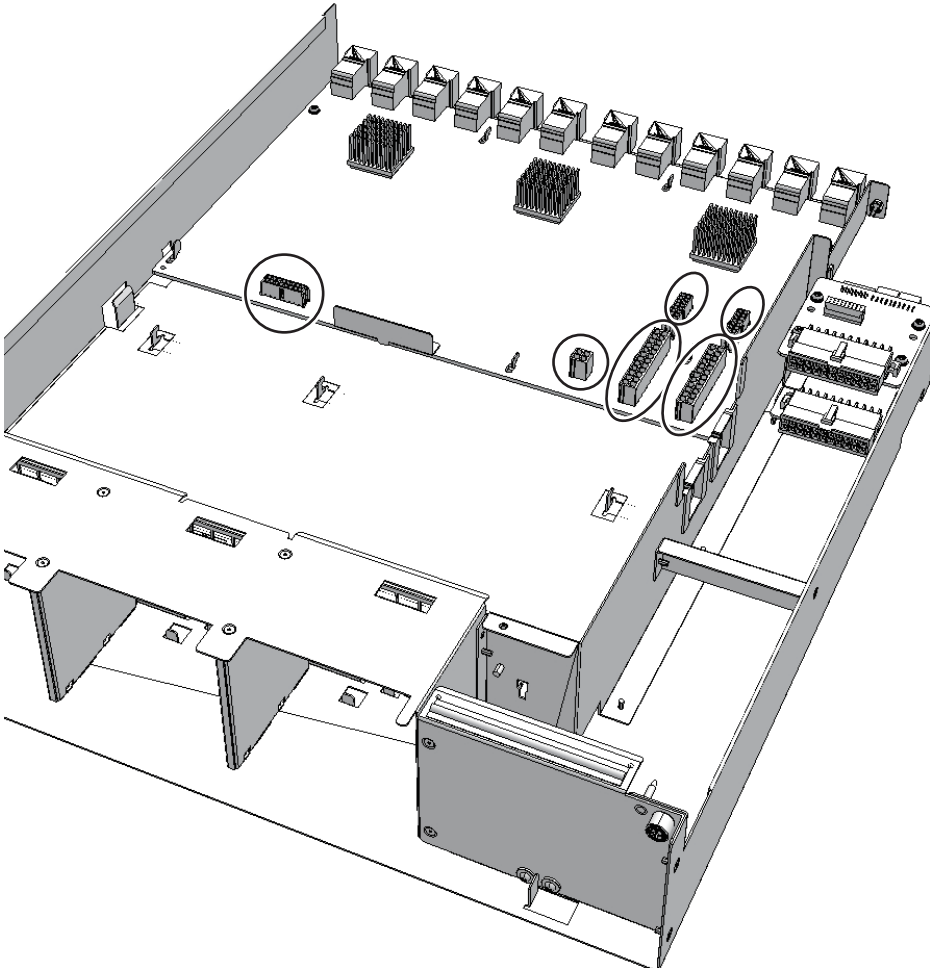
Figure 15-6 I/O board screws



3. **Connect all the six cables to the I/O board.**

Note - Connect the cables in their original positions by referring to the record that you made before the start of maintenance.

Figure 15-7 I/O board cables



15.5.2 Restoring the chassis

1. **Install the PCI tray.**
   For details, see "14.5.2 Installing the PCI tray."
2. **Install all the fan units.**
   For details, see "13.5.1 Installing a fan unit."
3. **Install the front cover.**
   For details, see "6.4.2 Installing the front cover."
4. **Install all the components listed below.**
   - Power supply unit
     For details, see "12.5 Installing a Power Supply Unit."

- PCIe card cassette
  For details, see "7.5.2 Installing a PCI Express card cassette."

15.6 Restoring the System

This section describes the procedure for restoring the system after I/O board installation. The restoration procedure differs depending on the maintenance type as follows:

- Mounting the link card on the server using PHP
- Inactive/cold maintenance
- System stopped/cold maintenance

15.6.1 Active/cold maintenance

Note - Active/cold maintenance is performed using either of the following two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method, using physical partition dynamic reconfiguration (DR), is usable only when the destination has the building block configuration of the SPARC M10-4S.

Mounting the link card on the server using PHP

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Mount the link card on the server using PHP.**
   Perform the procedure up to step 2 in6.1.1 Mounting the link card on the server using PHP."
3. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."
4. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."

   If the firmware version is the same as the one before maintenance, you do not

have to perform this step. Go to step 3 in "6.1.1 Mounting the link card on the server using PHP."

5. **If the firmware has been updated, the firmware must be applied. To do this, execute the cfgadm(1M) command to release the link card requiring maintenance from the logical domain.**
   If the firmware has not yet been updated, you do not have to perform this step. Go to step 7.

```
# cfgadm -c disconnect Ap_ID
```

6. **If you have updated the firmware, again mount the PCI expansion unit requiring maintenance on the server.**
   For details, see "6.1.1 Mounting the link card on the server using PHP."
7. **Close the rack door.**

Mounting the link card on the server using physical partition dynamic reconfiguration (DR)

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Mount the chassis to which the PCI expansion unit requiring maintenance is connected on the physical partition using physical partition dynamic reconfiguration (DR).**
   Perform the procedure in "Mounting the chassis containing the link card on the physical partition" up to step 8.
3. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."
4. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."

   If the firmware version is the same as the one before maintenance, you do not have to perform this step. Go to "Restoring the logical domain to the status it had before maintenance."
5. **Close the rack door.**

15.6.2 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the link card and PCI expansion unit requiring maintenance are recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."

   If the firmware version is the same as the one before maintenance, you do not have to perform this step. Go to step 6.
6. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
7. **Close the rack door.**

15.6.3 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the link card and PCI expansion unit requiring maintenance are recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Check the firmware version of the PCI expansion unit.**
   For details, see "For active maintenance" in "How to check the serial number and firmware version of the PCI expansion unit."
5. **If the firmware version is different from the one before maintenance, match it to the firmware version before maintenance.**
   For details, see "C.2 Updating the Firmware."

   If the firmware version is the same as the one before maintenance, you do not have to perform this step. Go to step 6.
6. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
7. **Close the rack door.**

Chapter 16

Maintaining the Fan Backplane

This chapter describes the maintenance procedure for the fan backplane.

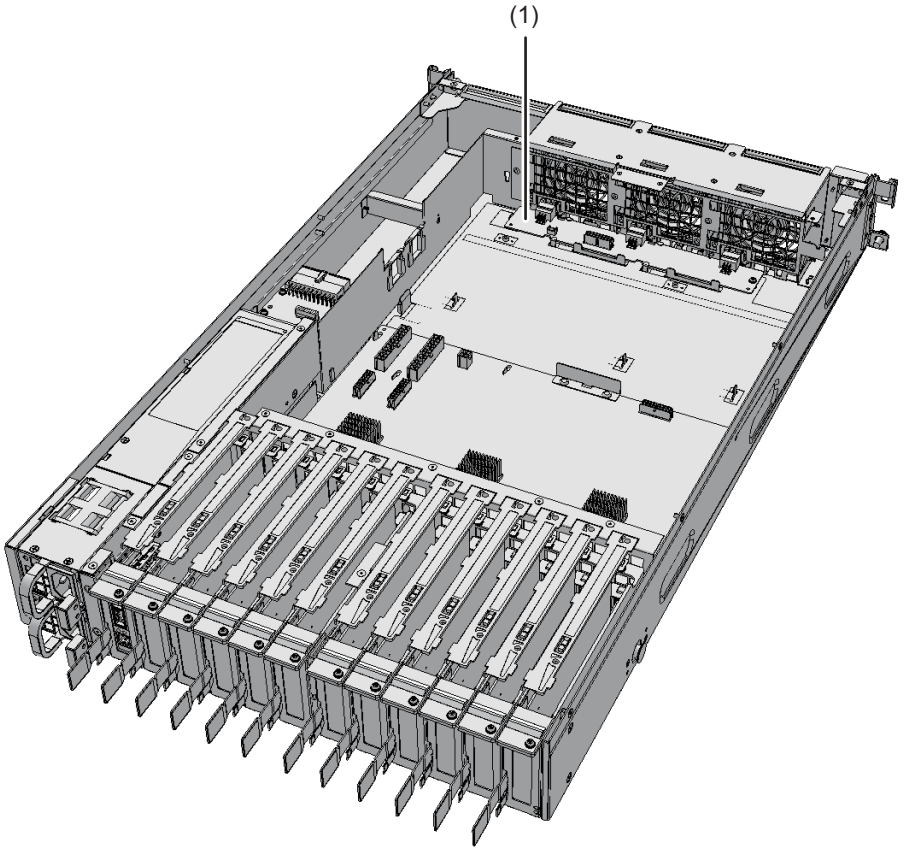
- Location of the Fan Backplane
- Before Maintaining the Fan Backplane
- Enabling the Removal of the Fan Backplane
- Removing the Fan Backplane
- Installing the Fan Backplane
- Restoring the System

16.1 Location of the Fan Backplane

This section describes the location of the fan backplane.
The fan backplane connects the individual fan units.

Caution - Do not replace a fan backplane together with an I/O board. If you replace a fan backplane together with an I/O board, the PCI expansion unit serial number changes to all 0's ("0000000000"). If the serial number changes to all 0's ("0000000000"), you need to restore the original serial number by using the ioxadm command of the XSCF firmware.
To replace both a fan backplane and an I/O board, replace either of the two, start the physical partition connected to the PCI expansion unit, and check for error log information related to the PCI expansion unit. After confirming that no such error log information is displayed, replace the other Field Replaceable Unit (FRU).

Figure 16-1 Location of the fan backplane



Location number	Component
1	Fan backplane (FANBP)

16.2 Before Maintaining the Fan Backplane

This section describes the maintenance types and flow for the fan backplane.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

16.2.1 Types of maintenance

Table 16-1 lists the types of maintenance for the fan backplane. For the definition of maintenance, see "Maintenance type when the destination of the PCI expansion unit has a building block configuration."

Table 16-1 Types of maintenance for fan backplane

-: Not maintainable

Connection destination	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped/hot	System stopped/cold
SPARC M10-1	-	-	-	-	-	Enabled
Configuration of 1 SPARC M10-4/ M10-4S	-	Enabled (*1)	-	-	-	Enabled
SPARC M10-4S	-	Enabled (*2)	-	Enabled	-	Enabled

*1: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting for the direct I/O function is enabled, then maintenance with the system stopped must be performed because the link card cannot use PHP.

*2: It is necessary to use the PCI Hot Plug (PHP) to release the link card mounted on a destination server from the system. If the setting of the direct I/O function is enabled, the link card cannot use PHP. Using the physical partition dynamic reconfiguration (DR), release the link card from the system.

16.2.2 Maintenance flow

Table 16-2 lists the sequence of the maintenance procedure for the fan backplane. See the relevant section.

Table 16-2 Maintenance flow

Details of update process		Replacement
1	Preparation	16.3
2	Fan backplane removal	16.4
3	Fan backplane installation	16.5
4	Restoring the system	16.6

16.3 Enabling the Removal of the Fan Backplane

This section describes the steps that must be completed prior to removing the fan backplane. The preparation procedure differs depending on the maintenance type as follows:

- Active/cold maintenance
- Inactive/cold maintenance
- System stopped/cold maintenance

Caution - To stop the system completely, all the power cords of the PCI expansion unit must be removed. If the power cords are not removed, an electrical failure may occur.

16.3.1 Active/cold maintenance

Note - Active/cold maintenance is performed using either of two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method, using physical partition dynamic reconfiguration (DR), can be applied only when the destination has the SPARC M10-4S building block configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the fan backplane requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.4 Checking log information."

4. **Release, from the physical partition, the server to which the PCI expansion unit requiring maintenance is connected.**
   For details, see "5.1 Releasing the Link Card from the Server."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**

For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

16.3.2 Inactive/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the fan backplane requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Turn off the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "5.2 Turning Off the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
6. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - For a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

16.3.3 System stopped/cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the fan backplane requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.4 Checking log information."

4. **Execute the ioxadm command to cause the CHECK LED of the PCI expansion unit requiring maintenance to blink and thus allow you to locate the unit.**
   In the following example, the CHECK LED of PCIBOX#12B4 is specified.

```
XSCF> ioxadm locator on PCIBOX#12B4
```

5. **Stop the entire system.**
   For details, see "5.3 Stopping the Entire System."
6. **Check the following LEDs to determine whether the PCI expansion unit requiring maintenance is actually maintainable.**
   - The LED of the link board is off.
   - The LED of the PCI card slot is off.
7. **Remove all the power cords from the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "5.4.1 Removing the power cords."

Note - When a dual power feed is installed, record the positions of the power cords before removing them to ensure that they are reinstalled correctly.

16.4 Removing the Fan Backplane

This section describes the procedure for removing the fan backplane.
Enable the removal of the fan backplane before attempting to remove it. For details, see "16.3 Enabling the Removal of the Fan Backplane."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.4 Notes Regarding Static Electricity."

16.4.1 Accessing the fan backplane

1. **Pull the following components out halfway.**
   - Power supply unit
     For details, see "12.4 Removing a Power Supply Unit."
   - PCI Express (PCIe) card cassette
     For details, see "7.4.2 Removing a PCI Express card cassette."

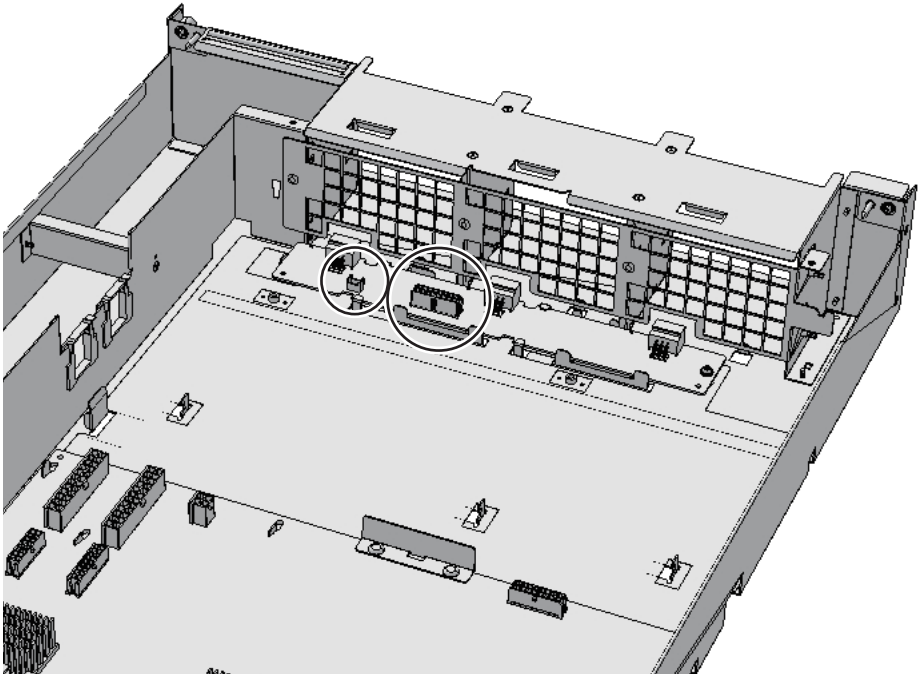
2. **Remove the front cover.**
   For details, see "5.4.2 Removing the front cover."
3. **Remove all the fan units.**
   For details, see "13.4.2 Removing a fan unit."
4. **Remove the PCI tray.**
   For details, see "14.4.2 Removing the PCI tray."

16.4.2 Removing the fan backplane

1. **Remove the two cables connected to the fan backplane.**

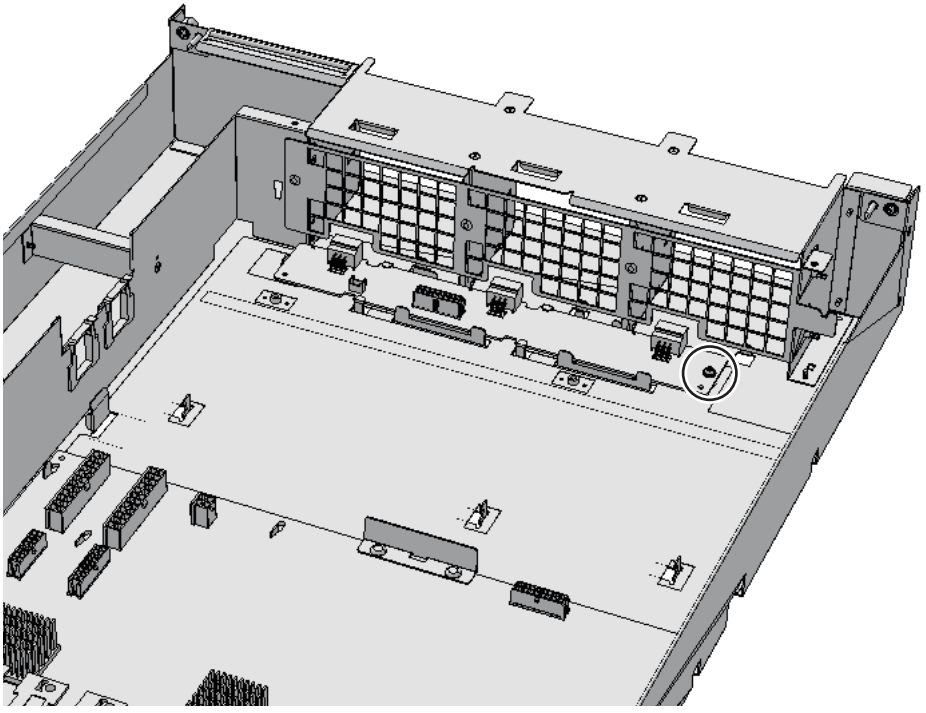
Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.

Figure 16-2 Fan backplane cable



2. **Remove the screw securing the fan backplane.**

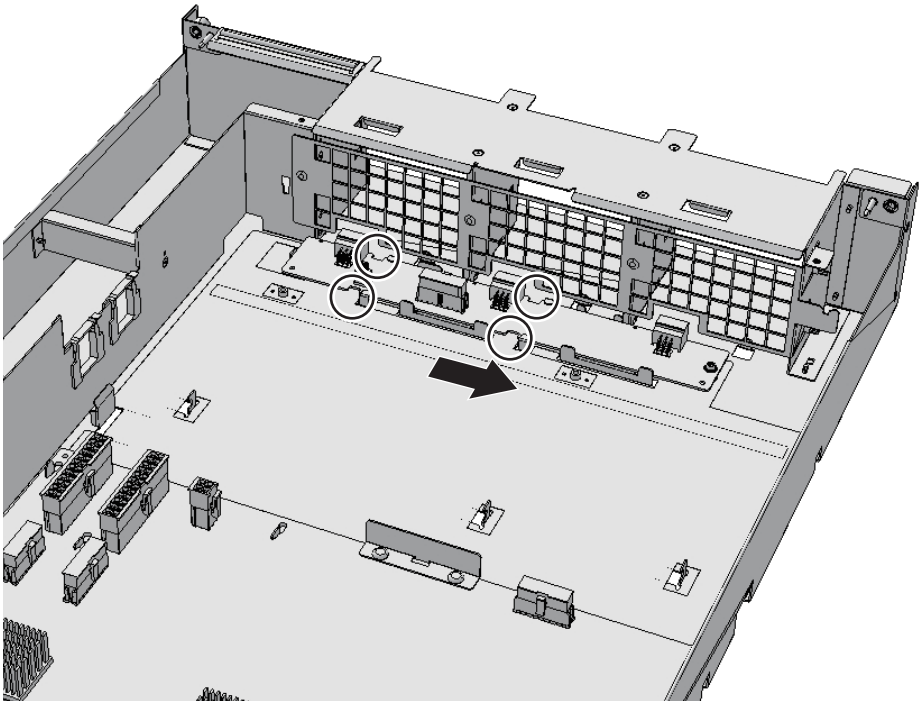
Figure 16-3 Fan backplane screw



3. **Slide the fan backplane in the direction of the arrow and align the groove of the fan backplane with the guides (four places) to remove it.**

Note - Do not remove the fan backplane by holding one of its connectors.
Note - Place the removed fan backplane on the grounded ESD mat to ground any static electricity.

Figure 16-4 Fan backplane removal



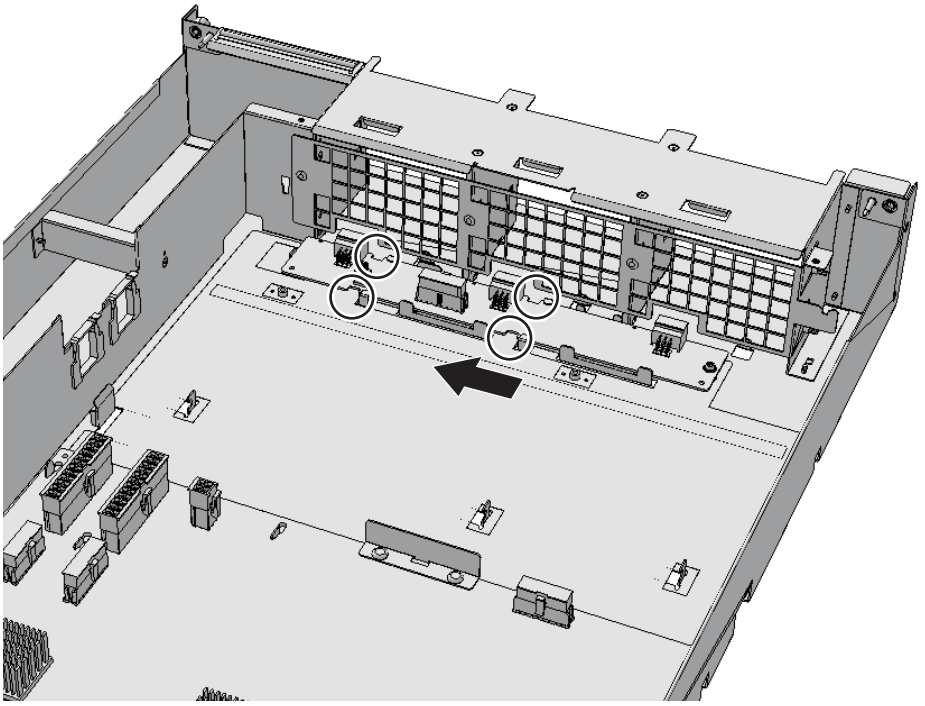
16.5 Installing the Fan Backplane

This section describes the procedure for installing the fan backplane.

16.5.1 Installing the fan backplane

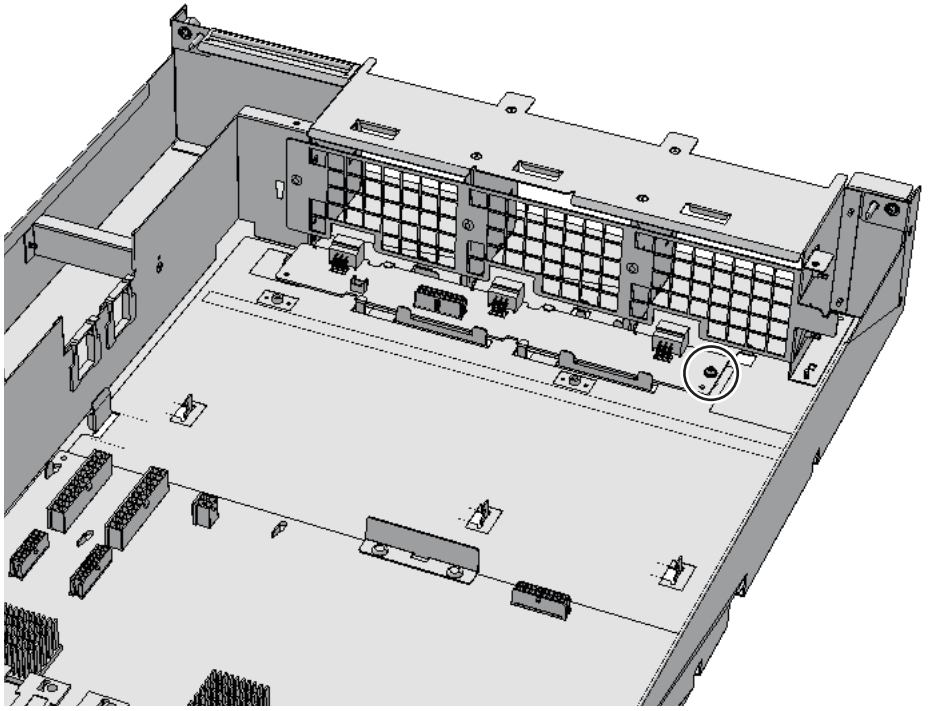
1. **Install the fan backplane by aligning it with the guides (four places) and then sliding it in the direction of the arrow.**

Figure 16-5 Fan backplane installation



2. **Secure the fan backplane with the screw.**

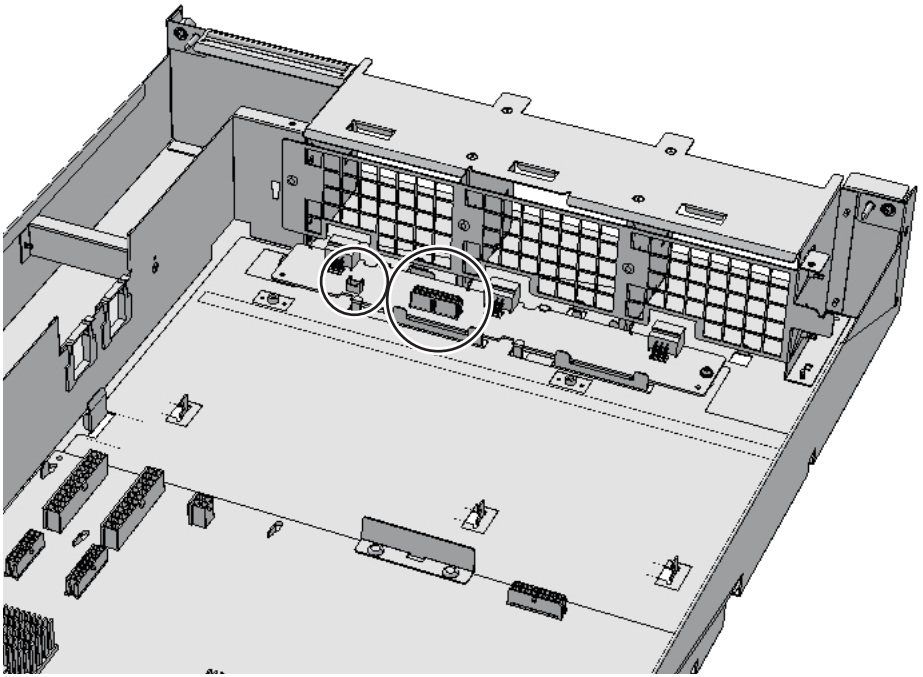
Figure 16-6 Fan backplane screw



3. **Connect the two cables to the fan backplane.**

Note - Connect the cables in their original positions by referring to the record that you made before the start of maintenance.

Figure 16-7 Fan backplane cable



16.5.2 Restoring the chassis

1. **Install the PCI tray.**
   For details, see "14.5.2 Installing the PCI tray."
2. **Install all the fan units.**
   For details, see "13.5.1 Installing a fan unit."
3. **Install the front cover.**
   For details, see "6.4.2 Installing the front cover."
4. **Install all the components listed below.**
   - Power supply unit
     For details, see "12.5 Installing a Power Supply Unit."
   - PCIe card cassette
     For details, see "7.5.2 Installing a PCI Express card cassette."

16.6 Restoring the System

This section describes the procedure for restoring the system after fan backplane

installation. The restoration procedure differs depending on the maintenance type as follows:

- Active/cold maintenance
- Inactive/cold maintenance
- System stopped/cold maintenance

16.6.1 Active/cold maintenance

Note - Active/cold maintenance is performed using either of two methods: Using PHP and using physical partition dynamic reconfiguration (DR). The latter method, using physical partition dynamic reconfiguration (DR), can be applied only when the destination has the SPARC M10-4S building block configuration.

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Mount the PCI expansion unit on the server.**
   For details, see "6.1 Mounting the Link Card on the Server."
4. **Close the rack door.**

16.6.2 Inactive/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance is recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

4. **Turn on the power to the physical partition to which the PCI expansion unit requiring maintenance belongs.**
   For details, see "6.2 Turning On the Power to the Physical Partition to Which the PCI Expansion Unit Requiring Maintenance Belongs."
5. **Close the rack door.**

16.6.3 System stopped/cold maintenance

1. **Connect all the power cords to the power supply unit of the PCI expansion unit requiring maintenance.**
   For details, see "6.4.1 Installing the power cords."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Log in to the XSCF shell.**
3. **Execute the testsb command to confirm that the PCI expansion unit requiring maintenance is recognized normally.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board "00-0".

```
XSCF> testsb -v -y -s 00-0
```

During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.

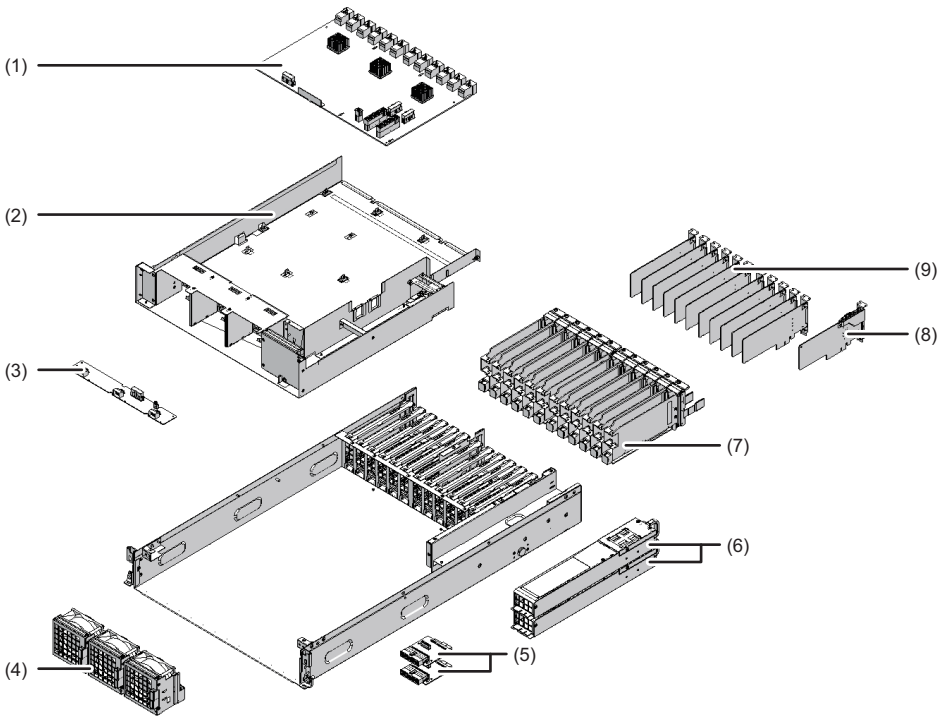
4. **Start the entire system.**
   For details, see "6.3 Starting the Entire System."
5. **Close the rack door.**

Appendix A

Component List

This appendix describes the components of the PCI expansion unit. Figure A-1 shows the locations of the components mounted in the chassis.

Figure A-1 Locations of components



Location number	Component
1	I/O board
2	PCI tray
3	Fan backplane
4	Fan unit
5	PSU backplane
6	Power supply unit
7	PCI Express card cassette
8	Link board
9	PCI Express Card

Appendix B

Component Specifications

This appendix describes the specifications of the components.

- PCI Express Card
- Link Board
- Power Supply Unit
- Fan Unit
- PCI Tray
- I/O Board
- Fan Backplane

B.1 PCI Express Card

Up to eleven (11) PCIe cards can be mounted.
Table B-1 lists the specifications of the PCIe card.

Table B-1 Specifications of the PCIe card

Item	Description
Maximum number of PCIe cards	11
Location	Rear of chassis
Active/hot maintenance	Supported
Active/cold maintenance	Supported (with SPARC M10-4/M10-4S connected)
Inactive/hot maintenance	Supported
Inactive/cold maintenance	Supported
System-stopped maintenance	Supported

For the maintenance procedure, see "Chapter 7 Maintaining the PCI Express Cards."

B.2 Link Board

The link board is mounted in the slot that is dedicated to the link board for the PCIe card slot. The link board is connected to the link card mounted on the SPARC M10-1/M10-4/M10-4S through the link cable and the management cable.
Table B-2 lists the specifications of the link board.

Table B-2 Link board specifications

Item	Description
Number of link boards	1
Location	Rear of chassis
Active/hot maintenance	Supported (with SPARC M10-4/M10-4S connected)
Active/cold maintenance	Supported (with SPARC M10-4/M10-4S connected)
Inactive/hot maintenance	Supported
Inactive/cold maintenance	Supported
System-stopped maintenance	Supported

For the maintenance procedure, see "Chapter 8 Maintaining the Link Board."

B.3 Power Supply Unit

The power supply units take input power and supply it to the system. The redundant configuration of the power supply units allows the system to continue operating even if one of the units fails.
Table B-3 lists the specifications of the power supply units.

Table B-3 Power supply unit specifications

Item	Description
Number of power supply units	2
Redundancy	1+1 redundant configuration
Location	Rear of chassis
Active/hot maintenance	Supported
Active/cold maintenance	Supported (with SPARC M10-4/M10-4S connected)
Inactive/hot maintenance	Supported
Inactive/cold maintenance	Supported
System-stopped maintenance	Supported

For the maintenance procedure, see "Chapter 12 Maintaining the Power Supply Units."

B.4 Fan Unit

Three fan units are mounted in the chassis to create flow that forces air out of the chassis. The redundant configuration of the fan units allows the system to continue running even if a fan unit fails.
Table B-4 lists the specifications of the fan unit.

Table B-4 Specifications of fan units

Item	Description
Number of fan units	3
Redundancy	2+1 redundant configuration
Location	Front of chassis
Active/hot maintenance	Supported
Active/cold maintenance	Supported (with SPARC M10-4/M10-4S connected)
Inactive/hot maintenance	Supported
Inactive/cold maintenance	Supported
System-stopped maintenance	Supported

For the maintenance procedure, see "Chapter 13 Maintaining the Fan Units."

B.5 PCI Tray

The PSU backplane, I/O board, and fan backplane are mounted on the PCI tray. When the PCI tray is to be replaced, replace the PCI tray and PSU backplane at the same time. Remount the I/O board and fan backplane on the replaced PCI tray.
Table B-5 lists the specifications of the PCI tray.

Table B-5 PCI tray specifications

Item	Description
Number of PCI trays	1
Location	Inside the chassis
Active/hot maintenance	Unsupported
Active/cold maintenance	Supported (with SPARC M10-4/M10-4S connected)
Inactive/hot maintenance	Unsupported

Table B-5 PCI tray specifications *(continued)*

Item	Description
Inactive/cold maintenance	Supported
System-stopped maintenance	Supported

For the maintenance procedure, see "Chapter 14 Maintaining the PCI Tray."

B.6 I/O Board

Eleven PCIe slots and one slot for the link board are provided on the I/O board. Table B-6 lists the specifications of the I/O board.

Table B-6 I/O board specifications

Item	Description
Number of I/O boards	1
Location	Rear of chassis
Active/hot maintenance	Unsupported
Active/cold maintenance	Supported (with SPARC M10-4/M10-4S connected)
Inactive/hot maintenance	Unsupported
Inactive/cold maintenance	Supported
System-stopped maintenance	Supported

For the maintenance procedure, see "Chapter 15 Maintaining the I/O Board."

B.7 Fan Backplane

The fan backplane connects the three fan units. Table B-7 lists the specifications of the fan backplane.

Table B-7 Fan backplane specifications

Item	Description
Number of fan backplanes	1
Location	Inside the chassis
Active/hot maintenance	Unsupported
Active/cold maintenance	Supported (with SPARC M10-4/M10-4S connected)

Table B-7 Fan backplane specifications *(continued)*

Item	Description
Inactive/hot maintenance	Unsupported
Inactive/cold maintenance	Supported
System-stopped maintenance	Supported

For the maintenance procedure, see "Chapter 16 Maintaining the Fan Backplane."

Appendix C

Updating the Firmware of the PCI Expansion Unit

This appendix describes the procedure for updating the firmware of a PCI expansion unit. Firmware update is done by the system administrator or a field engineer.

- Before Updating the Firmware
- Updating the Firmware
- Problems during Firmware Update

C.1 Before Updating the Firmware

This section describes the precautions to be observed when updating and the method of checking the firmware version.

C.1.1 Precautions for updating

Note the following points when updating the firmware.

- Always read the latest Product Notes.
- It is not possible to update the firmware on more than one unit at a time. Update the firmware one unit at at time.
- The firmware can be updated if any of the following conditions are met when the system is operating and the PCI expansion unit can be recognized from the XSCF.
  - The PCI expansion unit is displayed when executing the ioxadm command.
  - The control domain to which the PCI expansion unit is connected is started and runs until the OpenBoot PROM state is set.
- Be sure to check the firmware version before replacing a link card or I/O board. The link card and I/O board contain the PCI expansion unit firmware. The firmware version cannot be automatically matched to the pre-replacement firmware version when the link card or I/O board is replaced. Therefore, matching with the pre-replacement firmware version must be done using a firmware version that has been checked in advance. After the replacement, if the PCI

expansion unit cannot be recognized from the XSCF, check the firmware version of the components that were not replaced. Then, match the firmware to the pre-replacement firmware version.

- Before replacing a link card together with an I/O board, be sure to check the firmware version. If you replace a link card together with an I/O board without checking the firmware version, it may not be possible to match the firmware version to the pre-replacement firmware version.
- Do not operate the system power supply during firmware update. To reflect the applied firmware, restart the physical partition or the I/O domain to which the PCI expansion unit belongs, or turn on the power again. Ask the system administrator to do this.
- If multiple PCI expansion units are being used and are combined in such a way that their firmware versions match, there will be no problem with their operation even if some of the PCI expansion units use different firmware versions.

C.1.2 How to check the serial number and firmware version of the PCI expansion unit

The largest firmware version number indicates the latest firmware. Check the current firmware version before starting update.
The procedures will be different for maintenance with the system stopped or for active maintenance.

For maintenance with the system stopped

1. **Switch the mode switches for the master chassis and those chassis whose XSCFs are in the standby state to Service mode.**
   - For the SPARC M10-1/M10-4
     This is always the master chassis since it has a single-unit configuration.
   - For a building block configuration (no crossbar box)
     Change the mode switches of BB-ID#00 and #01 to Service mode.
   - For a building block configuration (with crossbar boxes)
     Change the mode switches of BB-ID#80 and #81 to Service mode.
2. **Log in to the XSCF shell of the master chassis.**
   - For the SPARC M10-1/M10-4
     This is always the master chassis since it has a single-unit configuration.
   - For the SPARC M10-4S (no crossbar box)
     The master chassis is the chassis where the BB-ID#00 or #01 MASTER LED (green) at the rear of the chassis is on.
   - For the SPARC M10-4S (with crossbar boxes)
     The master chassis is the chassis where the BB-ID#80 or #81 MASTER LED (green) at the rear of the chassis is on.
3. **Execute the setpparparam command, and disable the Auto boot function of the physical partition.**
   In the following example, PPAR-ID 0 is set for Auto boot.

If Auto boot is disabled for the physical partition, go to step 4.

```
XSCF> setpparparam -p 0 -s bootscript "setenv auto-boot? false"
```

4. **Execute the poweron command to start the system.**
   For a building block configuration, specify the physical partition connected to the PCI expansion unit, and start the system.

   In the following example, PPAR-ID 0 is specified.

```
XSCF> poweron -p 0
```

5. **If multiple PCI expansion units are connected, execute the ioxadm list command to check the combination of the link card and the I/O board.**

```
XSCF> ioxadm list
PCIBOX       Link
PCIBOX#2007  BB#00-PCI#10
PCIBOX#2006  BB#00-PCI#09
PCIBOX#2005  BB#00-PCI#08
PCIBOX#2004  BB#00-PCI#07
```

6. **Execute the ioxadm -v list command to check the serial number and the firmware version of the PCI expansion unit.**
   [Location] displays the last four digits of the serial number of the PCI expansion unit, and [FW Ver] displays the firmware version of the link card ("CARD" shown on [Type]) and that of the I/O board ("IOBOARD" shown on [Type]).

   The following example shows that "2007" is the last four digits of the serial number of the PCI expansion unit and "1080" is the firmware version of the link card and the I/O board.

```
XSCF> ioxadm -v list
Location           Type    FW Ver  Serial Num           Part Num            State
PCIBOX#2007         PCIBOX   -      PZ21242007                                 On
PCIBOX#2007/PSU#0  PSU      -      FEJD1212000521 CA01022-0750-D/7060988      On
PCIBOX#2007/PSU#1  PSU      -      FEJD1201000738 CA01022-0750-D/7060988      On
PCIBOX#2007/IOB    IOBOARD 1080    PP12470297     CA20365-B66X 010AJ/7061033 On
PCIBOX#2007/LINKBD BOARD    -      PP1244027P     CA20365-B60X 001AA/7061035 On
PCIBOX#2007/FANBP  FANBP    -      PP12470298     CA20365-B68X 005AD/7061025 On
BB#00-PCI#10       CARD    1080    PP124401LZ     CA20365-B59X 001AA/7061040 On
```

A firmware version is displayed as a four-digit release number in "xyyz" format. Each release number is indicated in "xyyz" format, as follows.

- x: Major release number
- yy: Minor release number
- z: Micro release number

For active maintenance

1. **Log in to the XSCF shell in the master chassis.**
   - For the SPARC M10-1/M10-4
     The chassis is always a master chassis because this is a single-chassis configuration.
   - For the SPARC M10-4S (without the crossbar box)
     The master chassis is the chassis where the MASTER LED (green) is on on the rear of the chassis of BB-ID#00 and #01.
   - For the SPARC M10-4S (with the crossbar box)
     The master chassis is the chassis where the MASTER LED (green) is on on the rear of the chassis of BB-ID#80 and #81.
2. **If multiple PCI expansion units are connected, execute the ioxadm list command to check the combination of the link card and the I/O board.**

```
XSCF> ioxadm list
PCIBOX       Link
PCIBOX#1007  BB#00-PCI#10
PCIBOX#1006  BB#00-PCI#09
PCIBOX#1005  BB#00-PCI#08
PCIBOX#1004  BB#00-PCI#07
```

3. **Execute the ioxadm -v list command to check the serial number and the firmware version of the PCI expansion unit.**
   [Location] displays the last four digits of the serial number of the PCI expansion unit, and [FW Ver] displays the firmware version of the link card ("CARD" shown on [Type]) and that of the I/O board ("IOBOARD" shown on [Type]).

   The following example shows that "2007" is the last four digits of the serial number of the PCI expansion unit and "1080" is the firmware version of the link card and the I/O board.

```
XSCF> ioxadm -v list
Location           Type    FW Ver  Serial Num          Part Num           State
PCIBOX#2007         PCIBOX   -      PZ21242007                               On
PCIBOX#2007/PSU#0  PSU      -      FEJD1212000521 CA01022-0750-D/7060988     On
PCIBOX#2007/PSU#1  PSU      -      FEJD1201000738 CA01022-0750-D/7060988     On
PCIBOX#2007/IOB    IOBOARD 1080    PP12470297     CA20365-B66X 010AJ/7061033 On
PCIBOX#2007/LINKBD BOARD    -      PP1244027P     CA20365-B60X 001AA/7061035 On
PCIBOX#2007/FANBP  FANBP    -      PP12470298     CA20365-B68X 005AD/7061025 On
BB#00-PCI#10       CARD    1080    PP124401LZ     CA20365-B59X 001AA/7061040 On
```

A firmware version is displayed as a four-digit release number in "xyyz" format. Each release number is indicated in "xyyz" format, as follows.

- x: Major release number
- yy: Minor release number
- z: Micro release number

C.1.3 Time required for updating

The following shows the time required for updating.

Table C-1 Time required for updating

System status	Updating time
The system is operating with a PCI expansion unit recognized from the XSCF	About 30 minutes

C.1.4 Flow of update process

Table C-2 lists the sequence of the update procedure for the firmware. See the relevant sections.

Table C-2 Flow of update process

Task		Reference
1	Preparing the firmware	C.2.1
2	Importing the firmware into the system	C.2.2
3	Updating the firmware	C.2.3

C.2 Updating the Firmware

This section describes the procedure for updating the firmware.

C.2.1 Preparing the firmware

1. **Download the firmware file from the following website.**
   Download the firmware file to an arbitrary folder on a PC or workstation that is connected to the system.

Note - The information on these sites is for customers of Fujitsu.

- Japanese site
  Customers who subscribe to SupportDesk can download the firmware file from the SupportDesk-Web.
- Global site

For the latest firmware file, contact your sales representative.

2. **Check the downloaded firmware version number.**
   For the firmware version, refer to the four-digit number of the firmware file (tar.gz).

C.2.2 Importing the firmware into the system

This section describes how to import the firmware with the CLI using the USB memory.
When using the XSCF Web, the procedure is the same as that for updating the XSCF.

Note - Perform this task with a user account that has the platadm or fieldeng privilege.

---

1. **Log in to the XSCF shell in the master chassis.**
   - For the SPARC M10-1/M10-4
     The chassis is always a master chassis because this is a single-chassis configuration.
   - For the SPARC M10-4S (without the crossbar box)
     The master chassis is the chassis where the MASTER LED (green) is on on the rear of the chassis of BB-ID#00 and #01.
   - For the SPARC M10-4S (with the crossbar box)
     The master chassis is the chassis where the MASTER LED (green) is on on the rear of the chassis of BB-ID#80 and #81.
2. **Connect the USB memory to the USB port of the server.**

Note - Connect the USB memory to the USB port shown as "MAINTENANCE ONLY."

---

3. **Execute the getflashimage command to import the downloaded firmware into the system.**
   Specify the downloaded firmware file (tar.gz).

   In the following example, the PCIBOX1100.tar.gz file in the images folder of the USB memory is specified.

```
XSCF> getflashimage file:///media/usb_msd/images/PCIBOX1100.tar.gz
```

   If the procedure ends successfully, "Download successful: ..." will be displayed first, and then "MD5: ..." will be displayed.

4. **Execute the getflashimage command, and confirm that the PCI expansion unit firmware has been imported.**

```
XSCF> getflashimage -l
```

C.2.3 Updating the firmware

Note - Perform this task with a user account that has the fieldeng privilege.

1. **Execute the ioxadm command to check the version of the firmware that is currently running.**

```
XSCF> ioxadm -v list
```

For details, see "C.1.2 How to check the serial number and firmware version of the PCI expansion unit."

2. **Execute the ioxadm command to update the firmware.**
In the following example, the PCIBOX#2007 firmware is updated to the 1100 version.

```
XSCF> ioxadm -c update PCIBOX#2007 -s 1100
Firmware update is started. (version=1100)
Firmware update has been completed.
```

After "Firmware update is started." is displayed, nothing is displayed for about 30 minutes before "Firmware update has been completed." is displayed.

3. **Execute the ioxadm command to check the firmware version.**
Confirm that the firmware version of the updated firmware is correct.

```
XSCF> ioxadm -v list
```

For details, see "C.1.2 How to check the serial number and firmware version of the PCI expansion unit."

4. **Reflect the firmware.**
If the system is started in step 4 of "For maintenance with the system stopped" in "C.1.2 How to check the serial number and firmware version of the PCI expansion unit," stop the system after returning the Auto boot setting of the target physical partition to the original one. Also, after stopping the system, return the mode switch on the operation panel to Locked mode.

```
{0} ok setenv auto-boot? true
XSCF> poweroff -p 0
```

C.3 Problems during Firmware Update

This section explains the problems that may occur during firmware update.
The following errors may occur:

- A hang up occurs in the XSCF while the firmware is being updated.
  Action: Update the firmware again.
- A hang up occurs in the PCI expansion unit while the firmware is being updated.
  Action: Either the link card or the I/O board has a failure. Replace the failed part.
- An error message related to a write failure "FROM write error" appears.
  If an error occurs during firmware update, operation continues using the previous version of the firmware.

  Action: Update the firmware again. The firmware update may be completed successfully. If an error occurs again during the firmware update, the I/O board has a failure. Replace the failed part.

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